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Presidential Address
ON
THE NATURE, ORIGIN, AND MAINTENANCE OF LIFE.

Delivered before the British Association for the Advancement of Science at Dundee on Sept. 5th, 1912,

By E. A. SCHÄFER, LL.D., D.Sc., M.D., F.R.S.,
PROFESSOR OF PHYSIOLOGY, UNIVERSITY OF EDINBURGH.

INTRODUCTORY.

GENTLEMEN,—It is exactly 45 years ago—to the day and hour—that the British Association last met in this city and in this hall to listen to a presidential address. The President was the Duke of Buccleuch; the general secretaries, Francis Galton and T. Archer Hirst; the general treasurer, William Spottiswoode; and the assistant general secretary, George Griffith, who was for many years a mainstay of the Association. The evening discourses were delivered by John Tyndall "On Matter and Force," by Archibald Geikie "On the Geological Origin of the Scenery of Scotland," and by Alexander Herschel "On the Present State of Knowledge regarding Meteors and Meteorites." The presidents of sections, which were then only seven in number, were for mathematics and physics, Sir William Thomson—later to be known as Lord Kelvin; for Chemistry, Thomas Anderson; for Geology, Archibald Geikie, who now as president of the Royal Society worthily fills the foremost place in science within the realm; for Biology, William Sharpey, my own revered master, to whose teaching and influence British physiology largely owes the honourable position which it at present occupies; for Geography, Sir Samuel Baker, the African explorer, who with his intrepid wife was the first to follow the Nile to its exit from the Albert Nyanza; for Economic Science, Mr. Grant Duff; and for Mechanical Science, Professor Rankine.

Other eminent men present were Sir David Brewster, J. Clerk Maxwell, Charles Wheatstone, Balfour Stewart, William Crookes, J. B. Lawes, and J. H. Gilbert (names inseparable in the history of agricultural science), Crum Brown, G. D. Liveing, W. H. Russell, Alexander Williamson, Henry Alleyne Nicholson, William Allmann, John Hutton Balfour, Spencer Cobbold, Anton Dohrn, Sir John Lubbock (now Lord Avebury), William McIntosh, E. Ray Lankester, C. W. Peach, William Pengelly, Hughes Bennett, John Cleland, John Davy, Alexander Christison, Alfred Russel Wallace, Allen Thomson, William Turner, George Busk, Michael Foster (not yet founder of the Cambridge School of Physiology), Henry Howorth, Sir Roderick Murchison, Clements R. Markham, Sir William (afterwards Lord) Armstrong, Sir Charles Lyell, and Douglas Galton. Many of these have in the course of nature passed away, but not a few remain, and we are glad to know that most of these retain their ancient vigour in spite of the five-and-forty years which separate us from the last meeting in this place.

SELECTION OF SUBJECT OF ADDRESS.

For the address with which it is usual for the President to open the proceedings of the annual assembly, the field covered by the aims of the British Association provides the widest possible range of material from which to select. One condition alone is prescribed by custom—viz., that the subject chosen shall lie within the bounds of those branches of knowledge which are dealt with in the Sections. There can be no ground of complaint regarding this limitation on the score of variety, for within the 40 years that I have myself been present (not, I regret to say, without a break) at these gatherings, problems relating to the highest mathematics on the one hand, and to the most utilitarian applications of science on the other, with every possible gradation between these extremes, have been discussed before us by successive Presidents; and the addition from time to time of new sections (one of which, that of agriculture, we welcome at this meeting) enables the whilom occupant of this chair to traverse paths which have not been previously trodden by his predecessors. On the last two occasions, under the genial guidance of Professors Bonney and Sir William Ramsay, we have successively been taken in imagination to the glaciers which flow between the highest peaks of the Alps and into the bowels of the earth, where we were invited to contemplate the prospective disappearance of the material upon which all our industrial prosperity depends. Needless to say that the lessons to be drawn from our visits to those unaccustomed levels were placed before us with all the eloquence with which these eminent representatives of geology and chemistry are gifted. It is fortunately not expected that I should be able to soar to such heights or to plunge to such depths, for the branch of science with which I am personally associated is merely concerned with the investigation of the problems of living beings, and I am able to invite you to remain for an hour or so at the level of ordinary mortality to consider certain questions which at any rate cannot fail to have an immediate interest for everyone present, seeing that they deal with the nature, origin, and maintenance of life.

DEFINITION.

Everybody knows, or thinks he knows, what life is; at least, we are all acquainted with its ordinary, obvious manifestations. It would therefore seem that it should not be difficult to find an exact definition. The quest has nevertheless baffled the most acute thinkers. Herbert Spencer devoted two chapters of his "Principles of Biology" to the discussion of the attempts at definition which had up to that date been proposed, and himself suggested another. But at the end of it all he is constrained to admit that no expression had been found which would embrace all the known manifestations of animate, and at the same time exclude those of admittedly inanimate, objects.

The ordinary dictionary definition of life is "the state of living." Dastre, following Claude Bernard, defines it as "the sum total of the phenomena common to all living beings."[1] Both of these definitions are, however, of the same character as Sydney Smith's definition of an archdeacon as "a person who performs archidiaconal functions." I am not myself proposing to take up your time by attempting to grapple with a task which has proved too great for the intellectual giants of philosophy, and I have the less disposition to do so because recent advances in knowledge have suggested the probability that the dividing line between animate and inanimate matter is less sharp than it has hitherto been regarded, so that the difficulty of finding an inclusive definition is correspondingly increased.

As a mere word "life" is interesting in the fact that it is one of those abstract terms which has no direct antithesis, although probably most persons would regard "death" in that light. A little consideration will show that this is not the case. "Death" implies the pre-existence of "life"; there are physiological grounds for regarding death as a phenomenon of life—it is the completion, the last act of life. We cannot speak of a non-living object as *possessing* death in the sense that we speak of a living object as *possessing* life. The adjective "dead" is, it is true, applied in a popular sense antithetically to objects which have never possessed life, as in the proverbial expression "as dead as a door-nail." But in the strict sense such application is not justifiable, since the use of the terms dead and living implies either in the past or in the present the possession of the recognised properties of living matter. On the other hand, the expression *living* and *lifeless*, *animate* and *inanimate*, furnish terms which are undoubtedly antithetical.

LIFE NOT IDENTICAL WITH SOUL.

Strictly and literally, the words animate and inanimate express the presence or absence of "soul," and not infrequently we find the terms "life" and "soul" erroneously employed as if identical. But it is hardly necessary for me to state that the remarks I have to make regarding "life" must not be taken to apply to the conception to which the word "soul" is attached. The fact that the formation of such a conception is only possible in connexion with life, and that the growth and elaboration of the conception has only been possible as the result of the most complex processes of life in the most complex of living organisms, has doubtless led to a belief in the identity of life with soul.

[1] "La Vie et la Mort," English translation by W. J. Greenstreet, 1911, p. 54.

But unless the use of the expression "soul" is extended to a degree which would deprive it of all special significance, the distinction between these terms must be strictly maintained.

PROBLEMS OF LIFE ARE PROBLEMS OF MATTER.

For the problems of life are essentially problems of matter; we cannot conceive of life in the scientific sense as existing apart from matter. The phenomena of life are investigated, and can only be investigated, by the same methods as all other phenomena of matter, and the general results of such investigations tend to show that living beings are governed by laws identical with those which govern inanimate matter. The more we study the manifestations of life the more we become convinced of the truth of this statement and the less we are disposed to call in the aid of a special and unknown form of energy to explain those manifestations.

PHENOMENA INDICATIVE OF LIFE: MOVEMENT.

The most obvious manifestation of life is "spontaneous" movement. We see a man, a dog, a bird move, and we know that they are alive. We place a drop of pond water under the microscope, and see numberless particles rapidly moving within it; we affirm that it swarms with "life." We notice a small mass of clear slime changing its shape, throwing out projections of its structureless substance, creeping from one part of the field of the microscope to another. We recognise that the slime is living; we give it a name—Amœba limax—the slug amœba. We observe similar movements in individual cells of our own body: in the white corpuscles of our blood, in connective tissue cells, in growing nerve cells, in young cells everywhere. We denote the similarity between these movements and those of the amœba by employing the descriptive term "amœboid" for both. We regard such movements as indicative of the possession of "life"; nothing seems more justifiable than such an inference.

SIMILARITY OF MOVEMENTS IN LIVING AND NON-LIVING MATTER.

But physicists [2] show us movements of a precisely similar character in substances which no one by any stretch of imagination can regard as living; movements of oil drops, of organic and inorganic mixtures, even of mercury globules, which are indistinguishable in their character from those of the living organisms we have been studying: movements which can only be described by the same term amœboid, yet obviously produced as the result of purely physical and chemical reactions causing changes in surface tension of the fluids under examination.[3] It is therefore certain that such movements are not specifically "vital," that their presence does not necessarily denote "life." And when we investigate closely even such active movements as those of a vibratile cilium or a phenomenon so closely identified with life as the contraction of a muscle, we find that these present so many analogies with amœboid movements as to render it certain that they are fundamentally of the same character and produced in much the same manner.[4] Nor can we for a moment doubt that the complex actions which are characteristic of the more highly differentiated organisms have been developed in the course of evolution from the simple movements characterising the activity of undifferentiated protoplasm; movements which can themselves, as we have seen, be perfectly imitated by non-living material. The chain of evidence regarding this particular manifestation of life—movement—is complete. Whether exhibited as the amœboid movement of the proteus animalcule or of the white corpuscle of our blood; as the ciliary motion of the infusorian or of the ciliated cells; as the contraction of a muscle under the governance of the will; or as the throbbing of the human heart responsive to every emotion of the mind, we cannot but conclude that it is alike subject to and produced in conformity with the general laws of matter, by agencies resembling those which cause movements in lifeless material.[5]

ASSIMILATION AND DISASSIMILATION.

It will perhaps be contended that the resemblances between the movements of living and non-living matter may be only superficial, and that the conclusion regarding their identity to which we are led will be dissipated when we endeavour to penetrate more deeply into the working of living substance. For can we not recognise along with the possession of movement the presence of other phenomena which are equally characteristic of life and with which non-living material is not endowed? Prominent among the characteristic phenomena of life are the processes of assimilation and disassimilation, the taking in of food, and its elaboration.[6] These, surely, it may be thought, are not shared by matter which is not endowed with life. Unfortunately for this argument, similar processes occur characteristically in situations which no one would think of associating with the presence of life. A striking example of this is afforded by the osmotic phenomena presented by solutions separated from one another by semipermeable films, a condition precisely similar to that which is constantly found in living matter.[7]

CHEMICAL PHENOMENA ACCOMPANYING LIFE.

It is not so long ago that the chemistry of organic matter was thought to be entirely different from that of inorganic substances. But the line between inorganic and organic chemistry, which up to the middle of the last century appeared sharp, subsequently became misty and has now disappeared. Similarly the chemistry of living organisms, which is now a recognised branch of organic chemistry, but used to be considered as so much outside the domain of the chemist that it could only be dealt with by those whose special business it was to study "vital" processes, is passing every day more out of the hands of the biologist and into those of the pure chemist.

THE COLLOID CONSTITUTION OF LIVING MATTER. IDENTITY OF PHYSICAL AND CHEMICAL PROCESSES IN LIVING AND NON-LIVING MATTER.

Somewhat more than half a century ago Thomas Graham published his epoch-making observations relating to the properties of matter in the colloidal state, observations which are proving all-important in assisting our comprehension of the properties of living substance. For it is becoming every day more apparent that the chemistry and physics of the living organism are essentially the chemistry and physics of nitrogenous colloids. Living substance or protoplasm always, in fact, takes the form of a colloidal solution. In this solution the colloids are associated with crystalloids (electrolytes), which are either free in the solution or attached to the molecules of the colloids. Surrounding and enclosing the living substance thus constituted of both colloid and crystalloid material is a film, probably also formed of colloid, but which may have a lipoid substratum associated with it (Overton). This film serves the purpose of an osmotic membrane, permitting of exchanges by diffusion between the colloidal solution constituting the protoplasm and the circumambient medium in which it lives. Other similar films or membranes occur in the interior of protoplasm. These films have in many cases specific characters, both physical and chemical, thus favouring the diffusion of

[2] G. Quincke, Annalen d. Physik u. Chem., 1870 and 1888.

[3] The causation not only of movements but of various other manifestations of life by alterations in surface tension of living substance is ably dealt with by A. B. Macallum in a recent article in Asher and Spiro's "Ergebnisse der Physiologie," 1911. Macallum has described an accumulation of potassium salts at the more active surfaces of the protoplasm of many cells, and correlates this with the production of cell-activity by the effect of such accumulation upon the surface tension. The literature of the subject will be found in this article.

[4] G. F. Fitzgerald (British Association Reports, 1896, and Scientific Transactions of the Royal Dublin Society, 1898) arrived at this conclusion with regard to muscle from purely physical considerations.

[5] "Vital spontaneity, so readily accepted by persons ignorant of biology, is disproved by the whole history of science. Every vital manifestation is a response to a stimulus, a provoked phenomenon. It is unnecessary to say this is also the case with brute bodies, since that is precisely the foundation of the great principle of the inertia of matter. It is plain that it is also as applicable to living as to inanimate matter."—Dastre, op. cit., p. 280.

[6] The terms "assimilation" and "disassimilation" express the physical and chemical changes which occur within protoplasm as the result of the intake of nutrient material from the circumambient medium and its ultimate transformation into waste products which are passed out again into that medium, the whole cycle of these changes being embraced under the term "metabolism."

[7] Leduc ("The Mechanism of Life," English translation by W. Deane Butcher, 1911) has given many illustrations of this statement. In the report of the meeting of 1867 in Dundee is a paper by Dr. J. D. Heaton (On Simulations of Vegetable Growths by Mineral Substances) dealing with the same class of phenomena. See also J. Hall-Edwards, Presidential Address to Birmingham and Midland Institute Scientific Society, November, 1911. The conditions of osmosis in cells have been especially studied by Hamburger ("Osmotischer Druck und Ionenlehre," Wiesbaden, 1902-4).

special kinds of material into and out of the protoplasm and from one part of the protoplasm to another. It is the changes produced under these physical conditions, associated with those caused by active chemical agents formed within protoplasm and known as *enzymes*, that effect assimilation and disassimilation. Quite similar changes can be produced outside the body (*in vitro*) by the employment of methods of a purely physical and chemical nature. It is true that we are not yet familiar with all the intermediate stages of transformation of the materials which are taken in by a living body into the materials which are given out from it. But since the initial processes and the final results are the same as they would be on the assumption that the changes are brought about in conformity with the known laws of chemistry and physics, we may fairly conclude that all changes in living substance are brought about by ordinary chemical and physical forces.

SIMILARITY OF THE PROCESSES OF GROWTH AND REPRODUCTION IN LIVING AND NON-LIVING MATTER.

Should it be contended that growth and reproduction are properties possessed only by living bodies and constitute a test by which we may differentiate between life and non-life, between the animate and inanimate creation, it must be replied that no contention can be more fallacious. Inorganic crystals grow and multiply and reproduce their like, given a supply of the requisite pabulum. In most cases for each kind of crystal there is, as with living organisms, a limit of growth which is not exceeded, and further increase of the crystalline matter results not in further increase in size but in multiplication of similar crystals. Leduc has shown that the growth and division of artificial colloids of an inorganic nature, when placed in an appropriate medium, present singular resemblances to the phenomena of the growth and division of living organisms. Even so complex a process as the division of a cell nucleus by karyokinesis as a preliminary to the multiplication of the cell by division—a phenomenon which would *primâ facie* have seemed and has been commonly regarded as a distinctive manifestation of the life of the cell—can be imitated with solutions of a simple inorganic salt, such as chloride of sodium, containing a suspension of carbon particles, which arrange and rearrange themselves under the influence of the movements of the electrolytes in a manner indistinguishable from that adopted by the particles of chromatin in a dividing nucleus. And in the process of sexual reproduction, the researches of J. Loeb and others upon the ova of the sea-urchin have proved that we can no longer consider such an apparently vital phenomenon as the fertilisation of the egg as being the result of living material brought to it by the spermatozoon, since it is possible to start the process of division of the ovum and the resulting formation of cells, and ultimately of all the tissues and organs—in short, to bring about the development of the whole body—if a simple chemical reagent is substituted for the male element in the process of fertilisation. Indeed, even a mechanical or electrical stimulus may suffice to start development.

THE QUESTION OF VITALISM AND VITAL FORCE.

Kurz und gut, as the Germans say, vitalism as a working hypothesis has not only had its foundations undermined, but most of the superstructure has toppled over, and if any difficulties of explanation still persist, we are justified in assuming that the cause is to be found in our imperfect knowledge of the constitution and working of living material. At the best vitalism explains nothing, and the term "vital force" is an expression of ignorance which can bring us no further along the path of knowledge. Nor is the problem in any way advanced by substituting for the term "vitalism" "neo-vitalism" and for "vital force" "biotic energy."[8] "New presbyter is but old priest writ large."

THE POSSIBILITY OF THE SYNTHESIS OF LIVING MATTER.

Further, in its chemical composition we are no longer compelled to consider living substance as possessing infinite complexity, as was thought to be the case when chemists first began to break up the proteins of the body into their simpler constituents. The researches of Miescher, which have been continued and elaborated by Kossel and his pupils, have acquainted us with the fact that a body so important for the nutritive and reproductive functions of the cell as the nucleus—which may be said, indeed, to represent the quintessence of cell-life—possesses a chemical constitution of no very great complexity; so that we may even hope some day to see the material which composes it prepared synthetically. And when we consider that the nucleus is not only itself formed of living substance, but is capable of causing other living substances to be built up—is, in fact, the directing agent in all the principal chemical changes which take place within the living cell—it must be admitted that we are a long step forward in our knowledge of the chemical basis of life. That it is the *form* of nuclear matter rather than its chemical and molecular structure which is the important factor in nuclear activity cannot be supposed. The form of nuclei, as every microscopist knows, varies infinitely, and there are numerous living organisms in which the nuclear matter is without form, appearing simply as granules distributed in the protoplasm. Not that the form assumed and the transformations undergone by the nucleus are without importance, but it is none the less true that even in an amorphous condition the material which in the ordinary cell takes the form of a "nucleus" may, in simpler organisms which have not in the process of evolution become complete cells, fulfil functions in many respects similar to those fulfilled by the nucleus of the more differentiated organism.

A similar anticipation regarding the probability of eventual synthetic production may be made for the proteins of the cell substance. Considerable progress in this direction has indeed already been made by Emil Fischer, who has for many years been engaged in the task of building up the nitrogenous combinations which enter into the formation of the complex molecule of protein. It is satisfactory to know that the significance of the work both of Fischer and Kossel in this field of biological chemistry has been recognised by the award to each of these distinguished chemists of a Nobel prize.

THE CHEMICAL CONSTITUTION OF LIVING SUBSTANCE.

The elements composing living substance are few in number. Those which are constantly present are carbon, hydrogen, oxygen, and nitrogen. With these, both in nuclear matter and also, but to a less degree, in the more diffuse living material which we know as protoplasm, phosphorus is always associated. "Ohne Phosphor kein Gedank" is an accepted aphorism; "Ohne Phosphor kein Leben" is equally true. Moreover, a large proportion, rarely less than 70 per cent., of water appears essential for any manifestation of life, although not in all cases necessary for its continuance, since organisms are known which will bear the loss of the greater part if not the whole of the water they contain without permanent impairment of their vitality. The presence of certain inorganic salts is no less essential, chief amongst them being chloride of sodium and salts of calcium, magnesium, potassium, and iron. The combination of these elements into a colloidal compound represents the chemical basis of life; and when the chemist succeeds in building up this compound it will without doubt be found to exhibit the phenomena which we are in the habit of associating with the term "life."[9]

SOURCE OF LIFE. THE POSSIBILITY OF SPONTANEOUS GENERATION.

The above considerations seem to point to the conclusion that the possibility of the production of life—i.e., of living material—is not so remote as has been generally assumed. Since the experiments of Pasteur, few have ventured to affirm a belief in the spontaneous generation of bacteria and monads and other micro-organisms, although before his time this was by many believed to be of universal occurrence. My esteemed friend, Dr. Charles Bastian, is, so far as I am aware, the only scientific man of eminence who still adheres to the old creed, and Dr. Bastian, in spite of numerous experiments and the publication of many books and papers, has not hitherto succeeded in winning over any converts to his opinion. I am myself so entirely convinced of the accuracy of the results which Pasteur obtained—are they not within the daily and hourly experience of everyone who deals with the sterilisation of

[8] B. Moore, in "Recent Advances in Physiology," 1906; Moore and Roaf, ibid.; and "Further Advances in Physiology," 1909. Moore lays especial stress on the transformations of energy which occur in protoplasm. See on the question of vitalism Gley (*Revue Scientifique*, 1911) and D'Arcy Thompson (Address to Section D at Portsmouth, 1911).

[9] The most recent account of the chemistry of protoplasm is that by Botazzi (Das Cytoplasma u. die Körpersäfte) in Winterstein's "Handb. d. vergl. Physiologie," Band I., 1912. The literature is given in this article.

organic solutions?—that I do not hesitate to believe, if living torulæ or mycelia are exhibited to me in flasks which had been subjected to prolonged boiling after being hermetically sealed, that there has been some fallacy either in the premisses or in the carrying out of the operation. The appearance of organisms in such flasks would not furnish to my mind proof that they were the result of spontaneous generation. Assuming no fault in manipulation or fallacy in observation, I should find it simpler to believe that the germs of such organisms have resisted the effects of prolonged heat than that they became generated spontaneously. If spontaneous generation is possible, we cannot expect it to take the form of living beings which show so marked a degree of differentiation, both structural and functional, as the organisms which are described as making their appearance in these experimental flasks.[10] Nor should we expect the spontaneous generation of living substance of any kind to occur in a fluid the organic constituents of which have been so altered by heat that they can retain no sort of chemical resemblance to the organic constituents of living matter. If the formation of life—of living substance—is possible at the present day—and for my own part I see no reason to doubt it—a boiled infusion of organic matter—and still less of inorganic matter—is the last place in which to look for it. Our mistrust of such evidence as has yet been brought forward need not, however, preclude us from admitting the possibility of the formation of living from non-living substance.[11]

LIFE A PRODUCT OF EVOLUTION.

Setting aside, as devoid of scientific foundation, the idea of immediate supernatural intervention in the first production of life, we are not only justified in believing, but compelled to believe, that living matter must have owed its origin to causes similar in character to those which have been instrumental in producing all other forms of matter in the universe; in other words, to a process of gradual evolution.[12] But it has been customary of late amongst biologists to shelve the investigation of the mode of origin of life by evolution from non-living matter by relegating its solution to some former condition of the earth's history, when, it is assumed, opportunities were accidentally favourable for the passage of inanimate matter into animate; such opportunities, it is also assumed, having never since recurred and being never likely to recur.[13]

Various eminent scientific men have even supposed that life has not actually originated upon our globe, but has been brought to it from another planet or from another stellar system. Some of my audience may still remember the controversy that was excited when the theory of the origin of terrestrial life by the intermediation of a meteorite was propounded by Sir William Thomson in his Presidential Address at the meeting of this Association in Edinburgh in 1871. To this "meteorite" theory[14] the apparently fatal objection was raised that it would take some 60 million years for a meteorite to travel from the nearest stellar system to our earth, and it is inconceivable that any kind of life could be maintained during such a period. Even from the nearest planet 150 years would be necessary, and the heating of the meteorite in passing through our atmosphere and at its impact with the earth would, in all probability, destroy any life which might have existed within it. A cognate theory, that of *cosmic panspermia*, assumes that life may exist and may have existed indefinitely in cosmic dust in the interstellar spaces (Richter, 1865; Cohn, 1872), and may with this dust fall slowly to the earth without undergoing the heating which is experienced by a meteorite. Arrhenius,[15] who adopts this theory, states that if living germs were carried through the ether by luminous and other radiations the time necessary for their transportation from our globe to the nearest stellar system would be only 9000 years, and to Mars only 20 days!

But the acceptance of such theories of the arrival of life on the earth does not bring us any nearer to a conception of its actual mode of origin; on the contrary, it merely serves to banish the investigation of the question to some conveniently inaccessible corner of the universe and leaves us in the unsatisfactory position of affirming not only that we have no knowledge as to the mode of origin of life—which is unfortunately true—but that we never can acquire such knowledge—which it is to be hoped is not true.[16] Knowing what we know, and believing what we believe, as to the part played by evolution in the development of terrestrial matter, we are, I think (without denying the possibility of the existence of life in other parts of the universe[17]) justified in regarding these cosmic theories as inherently improbable—at least in comparison with the solution of the problem which the evolutionary hypothesis offers.[18]

THE EVOLUTIONARY HYPOTHESIS AS APPLIED TO THE ORIGIN OF LIFE.

I assume that the majority of my audience have at least a general idea of the scope of this hypothesis, the general acceptance of which has within the last 60 years altered the whole aspect not only of biology but of every other branch of natural science, including astronomy, geology, physics, and chemistry.[19] To those who have not this familiarity I would recommend the perusal of a little book by Professor Judd, entitled "The Coming of Evolution," which has recently appeared as one of the Cambridge manuals. I know of no similar book in which the subject is as clearly and succinctly treated. Although the author nowhere expresses the opinion that the actual origin of life on the earth has arisen by evolution from non-living matter, it is impossible to read either this or any similar exposition in which the essential unity of the evolutionary process is insisted upon without concluding that the origin of life must have been due to the same process, this process being, without exception, continuous, and admitting of no gap at any part of its course. Looking, therefore, at the evolution of living matter by the light which is shed upon it from the study of the evolution of matter in general, we are led to regard it as

[10] It is fair to point out that Dr. Bastian suggests that the formation of ultramicroscopic living particles may precede the appearance of the microscopic organisms which he describes. "The Origin of Life," 1911, p. 65.

[11] The present position of the subject is succinctly stated by Dr. Chalmers Mitchell in his article on "Abiogenesis" in the "Encyclopædia Britannica." Dr. Mitchell adds: "It may be that in the progress of science it may yet be possible to construct living protoplasm from non-living material. The refutation of abiogenesis has no further bearing on this possibility than to make it probable that if protoplasm ultimately be formed in the laboratory it will be by a series of steps, the earlier steps being the formation of some substance, or substances, now unknown, which are not protoplasm. Such intermediate stages may have existed in the past." And Huxley in his presidential address at Liverpool in 1870 says: "But though I cannot express this conviction" (i.e., of the impossibility of the occurrence of abiogenesis, as exemplified by the appearance of organisms in hermetically sealed and sterilised asks) "too strongly, I must carefully guard myself against the supposition that I intend to suggest that no such thing as abiogenesis ever has taken place in the past or ever will take place in the future. With organic chemistry, molecular physics, and physiology yet in their infancy and every day making prodigious strides, I think it would be the height of presumption for any man to say that the conditions under which matter assumes the properties we call 'vital' may not, some day, be artificially brought together."

[12] The arguments in favour of this proposition have been arrayed by Meldola in his Herbert Spencer lecture 1910, pp. 16-24. Meldola leaves the question open whether such evolution has occurred only in past years or is also taking place now. He concludes that whereas certain carbon compounds have survived by reason of possessing extreme stability, others—the precursors of living matter—survived owing to the possession of extreme lability and adaptability to variable conditions of environment. A similar suggestion was previously made by Lockyer, "Inorganic Evolution," 1900, pp. 169; 170.

[13] T. H. Huxley, Presidential Address, 1870; A. B. Macallum, "On the Origin of Life on the Globe," in Transactions of the Canadian Institute, VIII.

[14] First suggested, according to Dastre, by de Salles-Guyon (Dastre, op. cit., p. 252). The theory received the support of Helmholtz.

[15] "Worlds in the Making," translated by H. Borns, chap. viii. p. 221, 1908.

[16] "The history of science shows how dangerous it is to brush aside mysteries—i.e., unsolved problems—and to interpose the barrier placarded 'eternal—no thoroughfare.'"—R. Meldola, Herbert Spencer Lecture, 1910.

[17] Some authorities, such as Errera, contend, with much probability, that the conditions in interstellar space are such that life, as we understand it, could not possibly exist there.

[18] As Verworn points out, such theories would equally apply to the origin of any other chemical combination, whether inorganic or organic, which is met with on our globe, so that they lead directly to absurd conclusions.—Allgemeine Physiologie, 1911.

[19] As Meldola insists, this general acceptance was in the first instance largely due to the writings of Herbert Spencer: "We are now prepared for evolution in every domain. ..... As in the case of most great generalisations, thought had been moving in this direction for many years. ..... Lamarck and Buffon had suggested a definite mechanism of organic development, Kant and Laplace a principle of celestial evolution, while Lyell had placed geology upon an evolutionary basis. The principle of continuity was beginning to be recognised in physical science. ..... It was Spencer who brought these independent lines of thought to a focus, and who was the first to make any systematic attempt to show that the law of development expressed in its widest and most abstract form was universally followed throughout cosmical processes, inorganic, organic, and superorganic."—Op. cit., p. 14

having been produced, not by a sudden alteration, whether exerted by natural or supernatural agency, but by a gradual process of change from material which was lifeless, through material on the borderland between inanimate and animate, to material which has all the characteristics to which we attach the term "life." So far from expecting a sudden leap from an inorganic, or at least an unorganised, into an organic and organised condition, from an entirely inanimate substance to a completely animate state of being, should we not rather expect a gradual procession of changes from inorganic to organic matter, through stages of gradually increasing complexity until material which can be termed living is attained? And in place of looking for the production of fully formed living organisms in hermetically sealed flasks, should we not rather search Nature herself, under natural conditions, for evidence of the existence, either in the past or in the present, of transitional forms between living and non-living matter?

The difficulty, nay the impossibility, of obtaining evidence of such evolution from the past history of the globe is obvious. Both the hypothetical transitional material and the living material which was originally evolved from it may, as Macallum has suggested, have taken the form of diffused ultra-microscopic particles of living substance,[20] and even if they were not diffused but aggregated into masses these masses could have been physically nothing more than colloidal watery slime which would leave no impress upon any geological formation. Myriads of years may have elapsed before some sort of skeleton in the shape of calcareous or siliceous spicules began to evolve itself, and thus enabled "life," which must already have possessed a prolonged existence, to make any sort of geological record. It follows that in attempting to pursue the evolution of living matter to its beginning in terrestrial history we can only expect to be confronted with a blank wall of nescience.

The problem would appear to be hopeless of ultimate solution if we are rigidly confined to the supposition that the evolution of life has only occurred once in the past history of the globe. But are we justified in assuming that at one period only, and as it were by a fortunate and fortuitous concomitation of substance and circumstance, living matter became evolved out of non-living matter—life became established? Is there any valid reason to conclude that at some previous period of its history our earth was more favourably circumstanced for the production of life than it is now?[21] I have vainly sought for such reason, and if none be forthcoming the conclusion forces itself upon us that the evolution of non-living into living substance has happened more than once—and we can be by no means sure that it may not be happening still.

It is true that up to the present there is no evidence of such happening: no process of transition has hitherto been observed. But, on the other hand, is it not equally true that the kind of evidence which would be of any real value in determining this question has not hitherto been looked for? We may be certain that if life is being produced from non-living substance it will be life of a far simpler character than any that has yet been observed—in material which we shall be uncertain whether to call animate or inanimate, even if we are able to detect it at all, and which we may not be able to visualise physically even after we have become convinced of its existence.[22] But we can look with the mind's eye and follow in imagination the transformation which non-living matter may have undergone and may still be undergoing to produce living substance. No principle of evolution is better founded than that insisted upon by Sir Charles Lyell, justly termed by Huxley "the greatest geologist of his time," that we must interpret the past history of our globe by the present; that we must seek for an explanation of what has happened by the study of what is happening; that, given similar circumstances, what has occurred at one time will probably occur at another. The process of evolution is universal. The inorganic materials of the globe are continually undergoing transition. New chemical combinations are constantly being formed and old ones broken up; new elements are making their appearance and old elements disappearing.[23] Well may we ask ourselves why the production of living matter alone should be subject to other laws than those which have produced, and are producing, the various forms of non-living matter; why what has happened may not happen? If living matter has been evolved from lifeless in the past, we are justified in accepting the conclusion that its evolution is possible in the present and in the future. Indeed, we are not only justified in accepting this conclusion, we are forced to accept it. When or where such change from non-living to living matter may first have occurred, when or where it may have continued, when or where it may still be occurring, are problems as difficult as they are interesting, but we have no right to assume that they are insoluble.

Since living matter always contains water as its most abundant constituent, and since the first living organisms recognisable as such in the geological series were aquatic, it has generally been assumed that life must first have made its appearance in the depths of the ocean.[24] Is it, however, certain that the assumption that life originated in the sea is correct? Is not the land-surface of our globe quite as likely to have been the nidus for the evolutionary transformation of non-living into living material as the waters which surround it? Within this soil almost any chemical transformation may occur; it is subjected much more than matters dissolved in sea-water to those fluctuations of moisture, temperature, electricity, and luminosity which are potent in producing chemical changes. But whether life, in the form of a simple slimy colloid, originated in the depths of the sea or on the surface of the land, it would be equally impossible for the geologist to trace its beginnings, and were it still becoming evolved in the same situations, it would be almost as impossible for the microscopist to follow its evolution. We are therefore not likely to obtain direct evidence regarding such a transformation of non-living into living matter in nature, even if it is occurring under our eyes.

An obvious objection to the idea that the production of living matter from non-living has happened more than once is that, had this been the case, the geological record should reveal more than one palæontological series. This objection assumes that evolution would in every case take an exactly similar course and proceed to the same goal—an assumption which is, to say the least, improbable. If, as might well be the case, in any other palæontological series than the one with which we are acquainted the process of evolution of living beings did not proceed beyond Protista, there would be no obvious geological evidence regarding it; such evidence would only be discoverable by a carefully directed search made with that particular object in view.[25] I would not by any means minimise the difficulties which attend the suggestion that the evolution of life may have occurred more than once or may still be happening, but, on the other hand, it must not be ignored that those which attend the assumption that the production of life has occurred once only are equally serious. Indeed, had the idea of the possibility of a multiple evolution of living substance been first in the field, I doubt

[20] There still exist in fact forms of life which the microscope cannot show us (E. A. Minchin, Presidential Address to Quekett Club, 1911) and germs which are capable of passing through the pores of a Chamberland filter.

[21] Chalmers Mitchell (Article "Life," Encyclopædia Britannica, eleventh edition) writes as follows: "It has been suggested from time to time that conditions very unlike those now existing were necessary for the first appearance of life, and must be repeated if living matter is to be reconstituted artificially. No support for such a view can be derived from observations of the existing conditions of life." Cf. also J. Hall-Edwards, op. cit.

[22] "Spontaneous generation of life could only be perceptually demonstrated by filling in the long terms of a series between the complex forms of inorganic and the simplest forms of organic substance. Were this done, it is quite possible that we should be unable to say (especially considering the vagueness of our definitions of life) where life began or ended."—K. Pearson, "Grammar of Science," second edition, 1900, p. 350.

[23] See on the production of elements, W. Crookes, Address to Section B, British Association, 1886; T. Preston, Nature, vol. lx., p. 180; J. J. Thomson, Phil. Mag., 1897, p. 311; Lockyer, op. cit., 1900; G. Darwin, Presidential Address, British Association, 1905.

[24] For arguments in favour of the first appearance of life having been in the sea, see A. B. Macallum, "The Palæochemistry of the Ocean," Transactions of the Canadian Institution, 1903-04.

[25] Lankester (Art. "Protozoa," Encyclopædia Britannica, tenth edition) conceives that the first protoplasm fed on the antecedent steps in its own evolution. F. J. Allen (British Association Reports, 1896) comes to the conclusion that living substance is probably constantly being produced, but that this fails to make itself evident owing to the substance being seized and assimilated by existing organisms. He believes that "in accounting for the first origin of life on this earth it is not necessary that, as Pflüger assumed, the planet should have been at a former period a glowing fire-ball." He "prefers to believe that the circumstances which support life would also favour its origin." And elsewhere: "Life is not an extraordinary phenomenon, not even an importation from some other sphere, but rather the actual outcome of circumstances on this earth."

if the prevalent belief regarding a single fortuitous production of life upon the globe would have become established among biologists—so much are we liable to be influenced by the impressions we receive in scientific childhood!

FURTHER COURSE OF EVOLUTION OF LIFE.

Assuming the evolution of living matter to have occurred—whether once only or more frequently matters not for the moment—and in the form suggested—viz., as a mass of colloidal slime possessing the property of assimilation and therefore of growth, reproduction would follow as a matter of course. For all material of this physical nature—fluid or semifluid in character—has a tendency to undergo subdivision when its bulk exceeds a certain size. The subdivision may be into equal or nearly equal parts, or it may take the form of buds. In either case every separated part would resemble the parent in chemical and physical properties, and would equally possess the property of taking in and assimilating suitable material from its liquid environment, growing in bulk and reproducing its like by subdivision. *Omne vivum e vivo.* In this way from any beginning of living material a primitive form of life would spread, and would gradually people the globe. The establishment of life being once effected, all forms of organisation follow under the inevitable laws of evolution. *Ce n'est que le premier pas qui coûte.*

We can trace in imagination the segregation of a more highly phosphorised portion of the primitive living matter, which we may now consider to have become more akin to the protoplasm of organisms with which we are familiar. This more phosphorised portion might not for myriads of generations take the form of a definite nucleus, but it would be composed of material having a composition and qualities similar to those of the nucleus of a cell. Prominent among these qualities is that of catalysis—the function of effecting profound chemical changes in other material in contact with it without itself undergoing permanent change. This catalytic function may have been exercised directly by the living substance or may have been carried on through the agency of the enzymes already mentioned, which are also of a colloid nature but of simpler constitution than itself, and which differ from the catalytic agents employed by the chemist in the fact that they produce their effects at a relatively low temperature. In the course of evolution special enzymes would become developed for adaptation to special conditions of life, and with the appearance of these and other modifications a process of differentiation of primitive living matter into individuals with definite specific characters gradually became established. We can conceive of the production in this way from originally undifferentiated living substance of simple differentiated organisms comparable to the lowest forms of Protista. But how long it may have taken to arrive at this stage we have no means of ascertaining. To judge from the evidence afforded by the evolution of higher organisms it would seem that a vast period of time would be necessary for even this amount of organisation to establish itself.

FORMATION OF THE NUCLEATED CELL.

The next important phase in the process of evolution would be the segregation and moulding of the diffused or irregularly aggregated nuclear matter into a definite nucleus around which all the chemical activity of the organism will in future be centred. Whether this change were due to a slow and gradual process of segregation or of the nature of a jump, such as nature does occasionally make, the result would be the advancement of the living organism to the condition of a complete nucleated cell: a material advance not only in organisation, but, still more important, in potentiality for future development. Life is now embodied in the cell, and every living being evolved from this will itself be either a cell or a cell-aggregate. *Omnis cellula e cellulâ.*

ESTABLISHMENT OF SEXUAL DIFFERENCES.

After the appearance of a nucleus—but how long after it is impossible to conjecture—another phenomenon appeared upon the scene in the occasional exchange of nuclear substance between cells. In this manner became established the process of sexual reproduction. Such exchange in the unicellular Protista might and may occur between any two cells forming the species, but in the multicellular Metazoa it became, like other functions, specialised in particular cells. The result of the exchange is rejuvenescence, associated with an increased tendency to subdivide and to produce new individuals. This is due to the introduction of a stimulating or catalytic chemical agent into the cell which is to be rejuvenated, as is proved by the experiments of Loeb already alluded to. It is true that the chemical material introduced into the germ-cell in the ordinary process of its fertilisation by the sperm-cell is usually accompanied by the introduction of definite morphological elements which blend with others already contained within the germ-cell, and it is believed that the transmission of such morphological elements of the parental nuclei is related to the transmission of parental qualities. But we must not be blind to the possibility that these transmitted qualities may be connected with specific chemical characters of the transmitted elements; in other words, that heredity also is one of the questions the eventual solution of which we must look to the chemist to provide.

AGGREGATE LIFE.

So far we have been chiefly considering life as it is found in the simplest forms of living substance, organisms for the most part entirely microscopic and neither distinctively animal nor vegetable, which were grouped together by Haeckel as a separate kingdom of animated nature—that of Protista. But persons unfamiliar with the microscope are not in the habit of associating the term "life" with microscopic organisms, whether these take the form of cells or of minute portions of living substance which have not yet attained to that dignity. We most of us speak and think of life as it occurs in ourselves and other animals with which we are familiar, and as we find it in the plants around us. We recognise it in these by the possession of certain properties—movement, nutrition, growth, and reproduction. We are not aware by intuition, nor can we ascertain without the employment of the microscope, that we and all the higher living beings, whether animal or vegetable, are entirely formed of aggregates of nucleated cells, each microscopic and each possessing its own life. Nor could we suspect by intuition that what we term our life is not a single indivisible property, capable of being blown out with a puff like the flame of a candle, but is the aggregate of the lives of many millions of living cells of which the body is composed. It is but a short while ago that this cell-constitution was discovered; it occurred within the lifetime, even within the memory, of some who are still with us. What a marvellous distance we have travelled since then in the path of knowledge of living organisms. The strides which were made in the advance of the mechanical sciences during the nineteenth century, which is generally considered to mark that century as an age of unexampled progress, are as nothing in comparison with those made in the domain of biology, and their interest is entirely dwarfed by that which is aroused by the facts relating to the phenomena of life which have accumulated within the same period. And not the least remarkable of these facts is the discovery of the cell-structure of plants and animals.

EVOLUTION OF THE CELL-AGGREGATE.

Let us consider how cell aggregates came to be evolved from organisms consisting of single cells. Two methods are possible—viz., (1) the adhesion of a number of originally separate individuals; (2) the subdivision of a single individual without the products of its subdivision breaking loose from one another. No doubt this last is the manner whereby the cell-aggregate was originally formed, since it is that by which it is still produced, and we know that the life-history of the individual is an epitome of that of the species. Such aggregates were in the beginning solid; the cells in contact with one another and even in continuity. Subsequently a space or cavity became formed in the interior of the mass, which was thus converted into a hollow sphere. All the cells of the aggregate were at first perfectly similar in structure and in function; there was no subdivision of labour. All would take part in effecting locomotion; all would receive stimuli from outside; all would take in and digest nutrient matter, which would then be passed into the cavity of the sphere to serve as a common store of nourishment. Such organisms are still found, and constitute the lowest types of Metazoa. Later one part of the hollow sphere became dimpled to form a cup; the cavity of the sphere became correspondingly altered in shape. With this change in structure differentiation of function between the cells covering the outside and those lining the inside of the cup made its appearance. Those on

the outside subserved locomotor functions and received and transmitted from cell to cell stimuli, physical or chemical, received by the organism, while those on the inside, being freed from such functions, tended to specialise in the direction of the inception and digestion of nutrient material, which, passing from them into the cavity of the invaginated sphere, served for the nourishment of all the cells composing the organism. The further course of evolution produced many changes of form and ever-increasing complexity of the cavity thus produced by simple invagination. Some of the cell aggregates settled down to a sedentary life, becoming plant-like in appearance and to some extent in habit. Such organisms, complex in form, but simple in structure, are the sponges. Their several parts are not, as in the higher Metazoa, closely interdependent; the destruction of any one part, however extensive, does not either immediately or ultimately involve death of the rest; all parts function separately, although doubtless mutually benefiting by their conjunction, if only by slow diffusion of nutrient fluid throughout the mass. There is already some differentiation in these organisms, but the absence of a nervous system prevents any general coördination, and the individual cells are largely independent of one another.

Our own life, like that of all the higher animals, is an *aggregate life;* the life of the whole is the life of the individual cells. The life of some of these cells can be put an end to, the rest may continue to live. This is, in fact, happening every moment of our lives. The cells which cover the surface of our body, which form the scarf-skin and the hairs and nails, are constantly dying, and the dead cells are rubbed off or cut away, their place being taken by others supplied from living layers beneath. But the death of these cells does not affect the vitality of the body as a whole. They serve merely as a protection, or an ornamental covering, but are otherwise not material to our existence. On the other hand, if a few cells, such as those nerve-cells under the influence of which respiration is carried on, are destroyed or injured, within a minute or two the whole living machine comes to a standstill, so that to the bystander the patient is dead; even the doctor will pronounce life to be extinct. But this pronouncement is correct only in a special sense. What has happened is that, owing to the cessation of respiration, the supply of oxygen to the tissues is cut off. And since the manifestations of life cease without this supply, the animal or patient appears to be dead. If, however, within a short period we supply the needed oxygen to the tissues requiring it, all the manifestations of life reappear.

It is only some cells which lose their vitality at the moment of so-called "general death." Many cells of the body retain their individual life under suitable circumstances long after the rest of the body is dead. Notable among these are muscle-cells. McWilliam showed that the muscle-cells of the blood-vessels give indications of life several days after an animal has been killed. The muscle-cells of the heart in mammals have been revived and caused to beat regularly and strongly many hours after apparent death. In man this result has been obtained as many as 18 hours after life had been pronounced extinct (Kuliabko): in animals after days have elapsed. Waller has shown that indications of life can be elicited from various tissues many hours and even days after general death. Sherrington observed the white corpuscles of the blood to be active when kept in a suitable nutrient fluid weeks after removal from the blood-vessels. A French histologist, Jolly, has found that the white corpuscles of the frog, if kept in a cool place and under suitable conditions, show at the end of a year all the ordinary manifestations of life. Carrell and Burrows have observed activity and growth to continue for long periods in the isolated cells of a number of tissues and organs kept under observation in a suitable medium. Carrell has succeeded in substituting entire organs obtained after death from one animal for those of another of the same species, and has thereby opened up a field of surgical treatment, the limit of which cannot yet be descried. It is a well-established fact that any part of the body can be maintained alive for hours isolated from the rest if perfused with serum (Kronecker, frog-heart) or with an oxygenated solution of salts in certain proportions (Ringer). Such revival and prolongation of the life of separated organs is an ordinary procedure in laboratories of physiology. Like all the other instances enumerated, it is based on the fact that the individual cells of an organ have a life of their own which is largely independent, so that they will continue in suitable circumstances to live, although the rest of the body to which they belonged may be dead.

But some cells, and the organs which are formed of them, are more necessary to maintain the life of the aggregate than others, on account of the nature of the functions which have become specialised in them. This is the case with the nerve-cells of the respiratory centre, since they preside over the movements which are necessary to effect oxygenation of the blood. It is also true for the cells which compose the heart, since this serves to pump oxygenated blood to all other cells of the body: without such blood most cells soon cease to live. Hence we examine respiration and heart to determine if life is present: when one or both of these are at a standstill we know that life cannot be maintained. These are not the only organs necessary for the maintenance of life, but the loss of others can be borne longer, since the functions which they subserve, although useful or even essential to the organism, can be dispensed with for a time. The life of some cells is therefore more, of others less, necessary for maintaining the life of the rest. On the other hand, the cells composing certain organs have in the course of evolution ceased to be necessary, and their continued existence may even be harmful. Wiedersheim has enumerated more than a hundred of these organs in the human body. Doubtless Nature is doing her best to get rid of them for us, and our descendants will some day have ceased to possess a vermiform appendix or a pharyngeal tonsil: until that epoch arrives we must rely for their removal on the more rapid methods of surgery!

THE MAINTENANCE OF THE LIFE OF THE CELL-AGGREGATE IN THE HIGHER ANIMALS. CO-ORDINATING MECHANISMS.

We have seen that in the simplest multicellular organisms, where one cell of the aggregate differs but little from another, the conditions for the maintenance of the life of the whole are nearly as simple as those for individual cells. But the life of a cell-aggregate such as composes the bodies of the higher animals is maintained not only by the conditions for the maintenance of the life of the individual cell being kept favourable, but also by the co-ordination of the varied activities of the cells which form the aggregate. Whereas in the lowest Metazoa all cells of the aggregate are alike in structure and function and perform and share everything in common, in higher animals (and for that matter in the higher plants also) the cells have become specialised, and each is only adapted for the performance of a particular function. Thus the cells of the gastric glands are only adapted for the secretion of gastric juice, the cells of the villi for the absorption of digested matters from the intestine, the cells of the kidney for the removal of waste products and superfluous water from the blood, those of the heart for pumping blood through the vessels. Each of these cells has its individual life and performs its individual functions. But unless there were some sort of coöperation and subordination to the needs of the body generally, there would be sometimes too little, sometimes too much gastric juice secreted; sometimes too tardy, sometimes too rapid an absorption from the intestine; sometimes too little, sometimes too much blood pumped into the arteries, and so on. As the result of such lack of coöperation the life of the whole would cease to be normal and would eventually cease to be maintained.

We have already seen what are the conditions which are favourable for the maintenance of life of the individual cell, no matter where situated. The principal condition is that it must be bathed by a nutrient fluid of suitable and constant composition. In higher animals this fluid is the lymph, which bathes the tissue elements, and is itself constantly supplied with fresh nutriment and oxygen by the blood. Some tissue-cells are directly bathed by blood; and in invertebrates, in which there is no special system of lymph-vessels, all the tissues are thus nourished. All cells both take from and give to the blood, but not the same materials or to an equal extent. Some, such as the absorbing cells of the villi, almost exclusively give; others, such as the cells of the renal tubules, almost exclusively take. Nevertheless, the resultant of all the give and take throughout the body serves to maintain the composition of the blood constant

under all circumstances. In this way the first condition of the maintenance of the life of the aggregate is fulfilled by insuring that the life of the individual cells composing it is kept normal.

The second essential condition for the maintenance of life of the cell-aggregate is the coördination of its parts and the due regulation of their activity, so that they may work together for the benefit of the whole. In the animal body this is effected in two ways: first, through the nervous system; and second, by the action of specific chemical substances which are formed in certain organs and carried by the blood to other parts of the body, the cells of which they excite to activity. These substances have received the general designation of "hormones" (ὁρμάω, to stir up), a term introduced by Professor Starling. Their action, and indeed their very existence, has only been recognised of late years, although the part which they play in the physiology of animals appears to be only second in importance to that of the nervous system itself; indeed, maintenance of life may become impossible in the absence of certain of these hormones.

PART PLAYED BY THE NERVOUS SYSTEM IN THE MAINTENANCE OF AGGREGATE LIFE. EVOLUTION OF A NERVOUS SYSTEM.

Before we consider the manner in which the nervous system serves to coördinate the life of the cell-aggregate, let us see how it has become evolved. The first step in the process was taken when certain of the cells of the external layer became specially sensitive to stimuli from outside, whether caused by mechanical impressions (tactile and auditory stimuli) or impressions of light and darkness (visual stimuli) or chemical impressions. The effects of such impressions were probably at first simply communicated to adjacent cells and spread from cell to cell throughout the mass. An advance was made when the more impressionable cells threw out branching feelers amongst the other cells of the organism. Such feelers would convey the effects of stimuli with greater rapidity and directness to distant parts. They may at first have been retractile, in this respect resembling the long pseudopodia of certain Rhizopoda. When they became fixed they would be potential nerve-fibres and would represent the beginning of a nervous system. Even yet (as Ross Harrison has shown), in the course of development of nerve-fibres, each fibre makes its appearance as an amœboid cell-process which is at first retractile, but gradually grows into the position it is eventually to occupy and in which it will become fixed.

In the further course of evolution a certain number of these specialised cells of the external layer sank below the general surface, partly perhaps for protection, partly for better nutrition; they became nerve-cells. They remained connected with the surface by a prolongation which became an afferent or sensory nerve-fibre, and through its termination between the cells of the general surface continued to receive the effects of external impressions; on the other hand, they continued to transmit these impressions to other more distant cells by their efferent prolongations. In the further course of evolution the nervous system thus laid down became differentiated into distinct *afferent*, *efferent*, and *intermediary* portions. Once established, such a nervous system, however simple, must dominate the organism, since it would furnish a mechanism whereby the individual cells would work together more effectually for the mutual benefit of the whole.

It is the development of the nervous system, although not proceeding in all classes along exactly the same lines, which is the most prominent feature of the evolution of the **Metazoa**. By and through it all impressions reaching the organism from the outside are translated into contraction or some other form of cell activity. Its formation has been the means of causing the complete divergence of the world of animals from the world of plants, none of which possess any trace of a nervous system. Plants react, it is true, to external impressions, and these impressions produce profound changes and even comparatively rapid and energetic movements in parts distant from the point of application of the stimulus—as in the well-known instance of the sensitive plant. But the impressions are in all cases propagated directly from cell to cell—not through the agency of nerve-fibres; and in the absence of anything corresponding to a nervous system it is not possible to suppose that any plant can ever acquire the least glimmer of intelligence. In animals, on the other hand, from a slight original modification of certain cells has directly proceeded in the course of evolution the elaborate structure of the nervous system with all its varied and complex functions, which reach their culmination in the workings of the human intellect. "What a piece of work is a man! How noble in reason? How infinite in faculty! In form and moving how express and admirable! In action how like an angel! In apprehension how like a god!" But lest he be elated with his psychical achievements, let him remember that they are but the result of the acquisition by a few cells in a remote ancestor of a slightly greater tendency to react to an external stimulus, so that these cells were brought into closer touch with the outer world; while, on the other hand, by extending beyond the circumscribed area to which their neighbours remained restricted, they gradually acquired a dominating influence over the rest. These dominating cells became nerve-cells, and now not only furnish the means for transmission of impressions from one part of the organism to another, but in the progress of time have become the seat of perception and conscious sensation, of the formation and association of ideas, of memory, volition, and all the manifestations of the mind.

REGULATION OF MOVEMENTS BY THE NERVOUS SYSTEM. VOLUNTARY MOVEMENTS.

The most conspicuous part played by the nervous system in the phenomena of life is that which produces and regulates the general movements of the body—movements brought about by the so-called voluntary muscles. These movements are actually the result of impressions imparted to sensory or afferent nerves at the periphery—e.g., in the skin or in the several organs of special sense; the effect of these impressions may not be immediate, but can be stored for an indefinite time in certain cells of the nervous system. The regulation of movements—whether they occur instantly after reception of the peripheral impression or result after a certain lapse of time; whether they are accompanied by conscious sensation or are of a purely reflex and unconscious character—is an intricate process, and the conditions of their coördination are of a complex nature involving not merely the causation of contraction of certain muscles but also the prevention of contraction of others. For our present knowledge of these conditions we are largely indebted to the researches of Professor Sherrington.

INVOLUNTARY MOVEMENTS.

A less conspicuous but no less important part played by the nervous system is that by which the contractions of involuntary muscles are regulated. Under normal circumstances these are always independent of consciousness, but their regulation is brought about in much the same way as is that of the contractions of voluntary muscles—viz., as the result of impressions received at the periphery. These are transmitted by afferent fibres to the central nervous system, and from the latter other impulses are sent down, mostly along the nerves of the sympathetic or autonomic system of nerves, which either stimulate or prevent contraction of the involuntary muscles. Many involuntary muscles have a natural tendency to continuous or rhythmic contraction which is quite independent of the central nervous system; in this case the effect of impulses received from the latter is merely to increase or diminish the amount of such contraction. An example of this double effect is observed in connexion with the heart, which—although it can contract regularly and rhythmically when cut off from the nervous system and even if removed from the body—is normally stimulated to increased activity by impulses coming from the central nervous system through the sympathetic, or to diminished activity by others coming through the vagus. It is due to the readiness by which the action of the heart is influenced in these opposite ways by the spread of impulses generated during the nerve-storms which we term "emotions" that in the language of poetry, and even of every day, the word "heart" has become synonymous with the emotions themselves.

The involuntary muscle of the arteries has its action similarly balanced. When its contraction is increased the size of the vessels is lessened and they deliver less blood; the parts they supply accordingly become pale in colour. On the other hand, when the contraction is diminished the vessels enlarge and deliver more blood; the parts which they supply become correspondingly ruddy. These changes

in the arteries, like the effects upon the heart, may also be produced under the influence of emotions. Thus "blushing" is a purely physiological phenomenon due to diminished action of the muscular tissue of the arteries, whilst the pallor produced by fright is caused by an increased contraction of that tissue. Apart, however, from these conspicuous effects, there is constantly proceeding a less apparent but not less important balancing action between the two sets of nerve-fibres distributed to heart and blood-vessels; which are influenced in one direction or another by every sensation which we experience and even by impressions of which we may be wholly unconscious, such as those which occur during sleep or anæsthesia, or which affect our otherwise insensitive internal organs.

Regulation of Secretion by the Nervous System.

A further instance of nerve regulation is seen in secreting glands. Not all glands are thus regulated, at least not directly; but in those which are, the effects are striking. Their regulation is of the same general nature as that exercised upon involuntary muscle, but it influences the chemical activities of the gland-cells and the outpouring of secretion from them. By means of this regulation a secretion can be produced or arrested, increased or diminished. As with muscle, a suitable balance is in this way maintained, and the activity of the glands is adapted to the requirements of the organism. Most of the digestive glands are thus influenced, as are the skin glands which secrete sweat. And by the action of the nervous system upon the skin glands, together with its effect in increasing or diminishing the blood-supply to the cutaneous blood-vessels, the temperature of our blood is regulated and is kept at the point best suited for maintenance of the life and activity of the tissues.

Effects of Emotions on Secretion.

The action of the nervous system upon the secretion of glands is strikingly exemplified, as in the case of its action upon the heart and blood-vessels by the effects of the emotions. Thus an emotion of one kind, such as the anticipation of food, will cause saliva to flow—"the mouth to water"; whereas an emotion of another kind, such as fear or anxiety, will stop the secretion, causing the "tongue to cleave unto the roof of the mouth" and rendering speech difficult or impossible. Such arrest of the salivary secretion also makes the swallowing of dry food difficult; advantage of this fact is taken in the "ordeal by rice," which used to be employed in the East for the detection of criminals.

Regulation by Chemical Agents: Hormones. Internal Secretions.

The activities of the cells constituting our bodies are controlled, as already mentioned, in another way than through the nervous system—viz., by chemical agents (hormones) circulating in the blood. Many of these are produced by special glandular organs, known as internally secreting glands. The ordinary secreting glands pour their secretions on the exterior of the body or on a surface communicating with the exterior; the internally secreting glands pass the materials which they produce directly into the blood. In this fluid the hormones are carried to distant organs. Their influence upon an organ may be essential to the proper performance of its functions or may be merely ancillary to it. In the former case removal of the internally secreting gland which produces the hormone, or its destruction by disease, may prove fatal to the organism.

Suprarenals.

This is the case with the suprarenal capsules: small glands which are adjacent to the kidneys, although having no physiological connexion with these organs. A Guy's physician, Dr. Addison, in the middle of the last century showed that a certain affection, almost always fatal, since known by his name, is associated with disease of the suprarenal capsules. A short time after this observation a French physiologist, Brown-Séquard, found that animals from which the suprarenal capsules are removed rarely survive the operation for more than a few days. In the concluding decade of the last century interest in these bodies was revived by the discovery that they are constantly yielding to the blood a chemical agent (or hormone) which stimulates the contractions of the heart and arteries and assists in the promotion of every action which is brought about through the sympathetic nervous system (Langley). In this manner the importance of their integrity has been explained, although we have still much to learn regarding their functions.

Thyroid.

Another instance of an internally secreting gland which is essential to life, or at least to its maintenance in a normal condition, is the thyroid. The association of imperfect development or disease of the thyroid with disorders of nutrition and inactivity of the nervous system is well ascertained. The form of idiocy known as cretinism and the affection termed myxœdema are both associated with deficiency of its secretion: somewhat similar conditions to these are produced by the surgical removal of the gland. The symptoms are alleviated or cured by the administration of its juice. On the other hand, enlargement of the thyroid, accompanied by increase of its secretion, produces symptoms of nervous excitation, and similar symptoms are caused by excessive administration of the glandular substance by the mouth. From these observations it is inferred that the juice contains hormones which help to regulate the nutrition of the body and serve to stimulate the nervous system, for the higher functions of which they appear to be essential. To quote M. Gley, to whose researches we owe much of our knowledge regarding the functions of this organ: "La genèse et l'exercice des plus hautes facultés de l'homme sont conditionnés par l'action purement chimique d'un produit de sécrétion. Que les psychologues méditent ces faits!"

Parathyroids.

The case of the parathyroid glandules is still more remarkable. These organs were discovered by Sandström in 1880. They are four minute bodies, each no larger than a pin's head, imbedded in the thyroid. Small as they are, their internal secretion possesses hormones which exert a powerful influence upon the nervous system. If they are completely removed a complex of symptoms, technically known as "tetany," is liable to occur, which is always serious and may be fatal. Like the hormones of the thyroid itself, therefore, those of the parathyroids produce effects upon the nervous system, to which they are carried by the blood; although the effects are of a different kind.

Pituitary.

Another internally secreting gland which has evoked considerable interest during the last few years is the pituitary body. This is a small structure no larger than a cob-nut attached to the base of the brain. It is mainly composed of glandular cells. Its removal has been found (by most observers) to be fatal—often within two or three days. Its hypertrophy, when occurring during the general growth of the body, is attended by an undue development of the skeleton, so that the stature tends to assume gigantic proportions. When the hypertrophy occurs after growth is completed, the extremities—viz., the hands and feet, and the bones of the face—are mainly affected; hence the condition has been termed "acromegaly" (enlargement of extremities). The association of this condition with affections of the pituitary was pointed out in 1885 by a distinguished French physician, Dr. Pierre Marie. Both "giants" and "acromegalists" are almost invariably found to have an enlarged pituitary. The enlargement is generally confined to one part—the anterior lobe—and we conclude that this produces hormones which stimulate the growth of the body generally and of the skeleton in particular. The remainder of the pituitary is different in structure from the anterior lobe and has a different function. From it hormones can be extracted which, like those of the suprarenal capsule although not exactly in the same manner, influence the contraction of the heart and arteries. Its extracts are also instrumental in promoting the secretion of certain glands. When injected into the blood they cause a free secretion of water from the kidneys and of milk from the mammary glands, neither of which organs are directly influenced (as most other glands are) through the nervous system. Doubtless under natural conditions these organs are stimulated to activity by hormones which are produced in the pituitary and which pass from this into the blood.

The internally secreting glands which have been mentioned (thyroid, parathyroid, suprarenal, pituitary) have, so far as is known, no other function than that of producing chemical substances of this character for the influencing of other organs, to which they are conveyed by the blood. It is interesting to observe that these glands are all of very small size, none being larger than a walnut, and some—the

parathyroids—almost microscopic. In spite of this, they are essential to the proper maintenance of the life of the body, and the total removal of any of them by disease or operation is in most cases speedily fatal.

PANCREAS.

There are, however, organs in the body yielding internal secretions to the blood in the shape of hormones, but exercising at the same time other functions. A striking instance is furnished by the pancreas, the secretion of which is the most important of the digestive juices. This—the pancreatic juice—forms the external secretion of the gland, and is poured into the intestine, where its action upon the food as it passes out of the stomach has long been recognised. It was, however, discovered in 1889 by von Mering and Minkowski that the pancreas also furnishes an internal secretion containing a hormone, which is passed from the pancreas into the blood, by which it is carried first to the liver and afterwards to the body generally. This hormone is essential to the proper utilisation of carbohydrates in the organism. It is well known that the carbohydrates of the food are converted into grape sugar and circulate in this form in the blood, which always contains a certain amount; the blood conveys it to all the cells of the body, and they utilise it as fuel. If, owing to disease of the pancreas or as the result of its removal by surgical procedure, its internal secretion is not available, sugar is no longer properly utilised by the cells of the body and tends to accumulate in the blood; from the blood the excess passes off by the kidneys, producing diabetes.

DUODENUM.

Another instance of an internal secretion furnished by an organ which is devoted largely to other functions is the "pro-secretin" found in the cells lining the duodenum. When the acid gastric juice comes into contact with these cells it converts their pro-secretin into "secretin." This is a hormone which is passed into the blood and circulates with that fluid. It has a specific effect on the externally secreting cells of the pancreas, and causes the rapid outpouring of pancreatic juice into the intestine. This effect is similar to that of the hormones of the pituitary body upon the cells of the kidney and mammary gland. It was discovered by Bayliss and Starling.

INTERNAL SECRETIONS OF THE REPRODUCTIVE ORGANS.

The reproductive glands furnish in many respects the most interesting example of organs which—besides their ordinary products, the germ- and sperm-cells (ova and spermatozoa)—form hormones which circulate in the blood and effect changes in cells of distant parts of the body. It is through these hormones that the secondary sexual characters, such as the comb and tail of the cock, the mane of the lion, the horns of the stag, the beard and enlarged larynx of a man, are produced, as well as the many differences in form and structure of the body which are characteristic of the sexes. The dependence of these so-called secondary sexual characters upon the state of development of the reproductive organs has been recognised from time immemorial, but has usually been ascribed to influences produced through the nervous system, and it is only in recent years that the changes have been shown to be brought about by the agency of internal secretions and hormones, passed from the reproductive glands into the circulating blood.[26]

CHEMICAL NATURE OF HORMONES.

It has been possible in only one or two instances to prepare and isolate the hormones of the internal secretions in a sufficient condition of purity to subject them to analysis, but enough is known about them to indicate that they are organic bodies of a not very complex nature, far simpler than proteins and even than enzymes. Those which have been studied are all dialysable, are readily soluble in water but insoluble in alcohol, and are not destroyed by boiling. One at least—that of the medulla of the suprarenal capsule—has been prepared synthetically, and when their exact chemical nature has been somewhat better elucidated it will probably not be difficult to obtain others in the same way.

From the above it is clear that not only is a coördination through the nervous system necessary in order that life shall be maintained in a normal condition, but a chemical coördination is no less essential. These may be independent of one another, but on the other hand they may react upon one another. For it can be shown that the production of some at least of the hormones is under the influence of the nervous system (Biedl, Asher, Elliott), whilst, as we have seen, some of the functions of the nervous system are dependent upon hormones.

PROTECTIVE CHEMICAL MECHANISMS, TOXINS, AND ANTITOXINS.

Time will not permit me to refer in any but the briefest manner to the protective mechanisms which the cell aggregate has evolved for its defence against disease, especially disease produced by parasitic micro-organisms. These, which belong with few exceptions to the Protista, are without doubt the most formidable enemies which the multicellular Metazoa, to which all the higher animal organisms belong, have to contend against. To such micro-organisms are due, *inter alia*, all diseases which are liable to become epidemic, such as anthrax and rinderpest in cattle, distemper in dogs and cats, small-pox, scarlet fever, measles, and sleeping sickness in man. The advances of modern medicine have shown that the symptoms of these diseases—the disturbances of nutrition, the temperature, the lassitude or excitement, and other nervous disturbances—are the effects of chemical poisons (*toxins*) produced by the micro-organisms and acting deleteriously upon the tissues of the body. The tissues, on the other hand, endeavour to counteract these effects by other chemical substances destructive to the micro-organisms or antagonistic to their action; these are known as *antibodies*. Sometimes the protection takes the form of a subtle alteration in the living substance of the cells which renders them for a long time, or even permanently, insusceptible (immune) to the action of the poison. Sometimes certain cells of the body, such as the white corpuscles of the blood, eat the invading micro-organisms and destroy them bodily by the action of chemical agents within their protoplasm. The result of an illness thus depends upon the result of the struggle between these opposing forces—the micro-organisms on the one hand and the cells of the body on the other—both of which fight with chemical weapons. If the cells of the body do not succeed in destroying the invading organisms it is certain that the invaders will in the long run destroy them, for in this combat no quarter is given. Fortunately we have been able by the aid of animal experimentation to acquire some knowledge of the manner in which we are attacked by micro-organisms and of the methods which the cells of our body adopt to repel the attack, and the knowledge is now extensively utilised to assist our defence. For this purpose protective serums or antitoxins, which have been formed in the blood of other animals, are employed to supplement the action of those which our own cells produce.

PARASITIC NATURE OF DISEASES.

It is not too much to assert that the knowledge of the parasitic origin of so many diseases and of the chemical agents which on the one hand cause, and on the other combat, their symptoms, has transformed medicine from a mere art practised empirically into a real science based upon experiment. The transformation has opened out an illimitable vista of possibilities in the direction not only of cure, but, more important still, of prevention. It has taken place within the memory of most of us who are here present. And only last February the world was mourning the death of one of the greatest of its benefactors—a former President of this Association[27]—who, by applying this knowledge to the practice of surgery, was instrumental, even in his own lifetime, in saving more lives than were destroyed in all the bloody wars of the nineteenth century!

SENESCENCE AND DEATH.

The question has been debated whether, if all accidental modes of destruction of the life of the cell could be eliminated, there would remain a possibility of individual cell-life, and even of aggregate cell-life, continuing indefinitely; in other words, Are the phenomena of senescence and death a natural and necessary sequence to the existence of life? To most of my audience it will appear that the subject is not open to debate. But some physiologists (e.g., Metchnikoff) hold that the condition of senescence is

[26] The evidence is to be found in F. H. A. Marshall, "The Physiology of Reproduction," 1911.

[27] Lord Lister was President at Liverpool in 1896.

itself abnormal; that old age is a form of disease or is due to disease, and, theoretically at least, is capable of being eliminated. We have already seen that individual cell-life, such as that of the white blood corpuscles and of the cells of many tissues, can under suitable conditions be prolonged for days or weeks or months after general death. Unicellular organisms kept under suitable conditions of nutrition have been observed to carry on their functions normally for prolonged periods and to show no degeneration such as would accompany senescence. They give rise by division to others of the same kind, which also, under favourable conditions, continue to live, to all appearance indefinitely. But these instances, although they indicate that in the simplest forms of organisation existence may be greatly extended without signs of decay, do not furnish conclusive evidence of indefinite prolongation of life. Most of the cells which constitute the body, after a period of growth and activity, sometimes more, sometimes less prolonged, eventually undergo atrophy and cease to perform satisfactorily the functions which are allotted to them. And when we consider the body as a whole, we find that in every case the life of the aggregate consists of a definite cycle of changes which, after passing through the stages of growth and maturity, always leads to senescence, and finally terminates in death. The only exception is in the reproductive cells, in which the processes of maturation and fertilisation result in rejuvenescence, so that instead of the usual downward change towards senescence, the fertilised ovum obtains a new lease of life, which is carried on into the new-formed organism. The latter again itself ultimately forms reproductive cells, and thus the life of the species is continued. It is only in the sense of its propagation in this way from one generation to another that we can speak of the indefinite continuance of life: we can only be immortal through our descendants!

AVERAGE DURATION OF LIFE AND POSSIBILITY OF ITS PROLONGATION.

The individuals of every species of animal appear to have an average duration of existence.[28] Some species are known the individuals of which live only for a few hours, whilst others survive for 100 years.[29] In man himself the average length of life would probably be greater than the threescore and ten years allotted to him by the Psalmist if we could eliminate the results of disease and accident; when these results are included it falls far short of that period. If the terms of life given in the purely mythological part of the Old Testament were credible, man would in the early stages of his history have possessed a remarkable power of resisting age and disease. But, although many here present were brought up to believe in their literal veracity, such records are no longer accepted even by the most orthodox of theologians, and the 900 odd years with which Adam and his immediate descendants are credited, culminating in the 969 of Methuselah, have been relegated, with the account of Creation and the Deluge, to their proper position in literature. When we come to the Hebrew Patriarchs, we notice a considerable diminution to have taken place in what the insurance offices term the "expectation of life." Abraham is described as having lived only to 175 years, Joseph and Joshua to 110, Moses to 120; even at that age "his eye was not dim nor his natural force abated." We cannot say that under ideal conditions all these terms are impossible; indeed, Metchnikoff is disposed to regard them as probable, for great ages are still occasionally recorded, although it is doubtful if any as considerable as these are ever substantiated. That the expectation of life was better then than now would be inferred from the apologetic tone adopted by Jacob when questioned by Pharaoh as to his age: "The days of the years of my pilgrimage are a hundred and thirty years; few and evil have the days of the years of my life been, and have not attained unto the days of the years of the life of my fathers in the days of their pilgrimage." David, to whom, before the advent of the modern statistician, we owe the idea that 70 years is to be regarded as the normal period of life,[30] is himself merely stated to have "died in a good old age." The periods recorded for the Kings show a considerable falling-off as compared with the Patriarchs; but not a few were cut off by violent deaths, and many lived lives which were not ideal. Amongst eminent Greeks and Romans few very long lives are recorded, and the same is true of historical persons in mediæval and modern history. It is a long life that lasts much beyond 80; three such linked together carry us far back into history. Mankind is in this respect more favoured than most mammals, although a few of these surpass the period of man's existence.[31] Strange that the brevity of human life should be a favourite theme of preacher and poet when the actual term of his "erring pilgrimage" is greater than that of most of his fellow creatures!

THE END OF LIFE.

The modern applications of the principles of preventive medicine and hygiene are, no doubt, operating to lengthen the average life. But even if the ravages of disease could be altogether eliminated, it is certain that, at any rate, the fixed cells of our body must eventually grow old and ultimately cease to function; when this happens to cells which are essential to the life of the organism general death must result. This will always remain the universal law, from which there is no escape. "All that lives must die, passing through nature to eternity."

Such natural death unaccelerated by disease—is not death by disease as unnatural as death by accident?—should be a quiet, painless phenomenon, unattended by violent change. As Dastre expresses it, "The need of death should appear at the end of life, just as the need of sleep appears at the end of the day." The change has been led gradually up to by an orderly succession of phases, and is itself the last manifestation of life. Were we all certain of a quiet passing—were we sure that there would be "no moaning of the bar when we go out to sea"—we could anticipate the coming of death after a ripe old age without apprehension. And if ever the time shall arrive when man will have learned to regard this change as a simple physiological process, as natural as the oncoming of sleep, the approach of the fatal shears will be as generally welcomed as it is now abhorred. Such a day is still distant; we can hardly say that its dawning is visible. Let us at least hope that, in the manner depicted by Dürer in his well-known etching, the sunshine which science irradiates may eventually put to flight the melancholy which hovers, bat-like, over the termination of our lives, and which even the anticipation of a future happier existence has not hitherto succeeded in dispersing.

ON THE VALUE OF A

QUANTITATIVE ALBUMIN ESTIMATION OF THE CEREBRO-SPINAL FLUID

(WITH SPECIAL REFERENCE TO THE SYNDROME OF MASSIVE COAGULATION AND XANTHOCHROMIA).

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IT seems of some interest to publish the results obtained by a routine examination of the cerebro-spinal fluids of various neurological cases, especially as some of the cases of paraplegia examined present a condition of the fluid which does not seem to have found its way into English neurological text-books or published reports. Of the condition of the fluid presented by three of my cases I have only been able to find six published reports in French, German, and American literature, but I believe that it is by no means so uncommon as this would lead one to suppose, and that it forms a diagnostic sign in paraplegia of considerable importance.

The method of albumin estimation I have used, whatever its technical errors, has yielded very reliable results in my examinations, and is applicable to very small amounts of fluid. In one of my cases, although only 2 c.c. of fluid could be obtained for examination, it was possible to completely revise the diagnosis by the examination of this.

[28] This was regarded by Buffon as related to the period of growth, but the ratio is certainly not constant. The subject is discussed by Ray Lankester in an early work: "On Comparative Longevity in Man and Animals," 1870.

[29] The approximately regular periods of longevity of different species of animals furnishes a strong argument against the theory that the decay of old age is an accidental phenomenon, comparable with disease.

[30] The expectation of life of a healthy man of 50 is still reckoned at about 20 years.

[31] "Hominis ævum cæterorum animalium omnium superat præter admodum paucorum."—Francis Bacon, "Historia Vitæ et Mortis," 1637.

Many writers have published the results in a series of cases where the albumin has been estimated by the Esbach method, but this is only applicable to large amounts of fluid (over 10 c.c.), and the precipitate is very flocculent, and does not lend itself to accurate readings. Auflecht's tube is better, as it requires only 3 to 4 c.c. of fluid, but for it a centrifuge of known velocity and special size is necessary for accurate readings, and graduations below 0·025 per cent. are not given.

The method I have used is a modification of Noguchi's butyric acid reaction[1]; 2 c.c. of fluid are used, and the result of the test is poured into a graduated centrifuge tube, which gives readings to 0·1 c.c. with fair accuracy; each 0·1 c.c. by this method is equivalent to 0·025 per cent. Small quantities of fluid can thus be examined, and fairly reliable readings obtained from them.

The results of my examination of 38 cases of nervous diseases of various kinds by this method are tabulated below. In each case 2 c.c. of the cerebro-spinal fluid was used. For comparison the results obtained by Esbach's method in several cases are also given, and where possible both methods have been used, and the Noguchi method thus standardised. I found that 0·4 c.c. precipitate corresponds fairly closely to 1 part per 1000.

Normal fluids gave readings of 0·05 to 0·2 c.c. (corresponding to 0·1 to 0·5 part per 1000). Syphilitic meningitis and parasypilitic disease gave readings up to 0·6 c.c., or 1·5 per 1000, but in no uncomplicated case did I get readings above this level. In many cases of syphilitic nervous disease, even where some lymphocytosis was present, no increase of the albumin content was found, and this was probably owing to the disease being mainly vascular, or to the meningeal inflammation having subsided. Contrary to the statements of some text-books, I have found the albumin content raised in tabes dorsalis to as high a degree as in any case of general paralysis that I examined. In other cases it was not above the normal level, and most often this was so in the chronic cases.

The cytological examination of the fluid was made in every case, but, owing to imperfections of the centrifuge used, the results were not always comparable. Where the fluid could be thoroughly centrifuged I found that 10 to 12 lymphocytes to the high-power field (magnification × 350) was found in normal fluids. In no case did I find complete absence of cells, except where the fluid had been kept for some time in a tube other than that used for centrifuging. The propensity of leucocytes to adhere to glass is well known, and probably this is what occurred in such cases. Quincke's technique for cytological examination was followed, the fluid being centrifuged at high speed for 20 minutes, and the deposit on the bottom of the tube (after being inverted till it was merely wet), was collected in a newly made capillary pipette and blown out on to a glass slide. In this way most of the cells in the fluid can be collected in a circle of 2 to 3 mm. diameter. By this method lymphocyte counts of 500 to 1000 to the high-power field are often obtained, and Boyd has reported a case in which the count was as high as 3450. Any count above 15 must be reckoned as pathological, and apart from meningitis seems to be pathognomonic of syphilitic or parasyphilitic disease.

In a separate table (I.) I give certain of Quincke's figures, with which mine agree fairly closely. Many writers report increase in the cellular elements of the fluid in cases of brain tumour, disseminated sclerosis, and herpes zoster. In my cases I did not get counts which I considered pathological in any of these diseases. Unfortunately I had not an opportunity of examining any case of cerebral endothelioma before operation, but three cases of glioma, in all of which the tumour was apparent on the surface of the brain, gave normal counts; and in an acute case of disseminated sclerosis, and in a case of subacute combined degeneration, during an attack of herpes zoster, the cell counts reached the upper normal limit.

Quincke gives some very interesting results in cases of cerebral tumour. Out of 45 cases, in 41 he found the albumin content less than 0·5 part per 1000—i.e., about normal—but in four cases the content was very high: (1) 2·7 to 4·5 parts per 1000; (2) 3·5 parts per 1000; (3) 8 per 1000; (4) 15 per 1000. He says: "In the latter cases the fluid was golden, and formed on standing a fine coagulum, without blood or cell elements, but the cause and significance of this unfortunately I cannot state." Cl. Vincent has obtained similar fluids from cases of cerebral tumour, and reports the presence of complement in some of the fluids.

[1] The Noguchi test is as follows: 2 c.c. cerebro-spinal fluid and 5 c.c. of 10 per cent. butyric acid are boiled together. 1 c.c. of normal sodium hydrate is then added, and the tube again boiled, when a flocculent precipitate is thrown down.

TABLE I.—*Results by Quincke.*

Nature of case.	Albumin by Esbach method.	Characters of fluid.
Tubercular meningitis—		
Several cases.	Less than 0·05 %	—
12 cases.	Over 0·2 %	—
5 ,,	,, 0·3 %	—
3 ,,	,, 0·4 %	—
1 case.	0·5%—0·6 %	—
Cerebral tumour—*		
41 cases.	Under 0·05 %	—
4 other cases.	0·27 % to 0·4 %	Golden fluid forming a fine reticulum on standing.
	0·35%	
	0·8%	
	1·5%	
Landry's paralysis.	0·15%	No cells seen.
Chronic myelitis.	0·2%	—
Headache.	0·025%	—
Headache of fever.	0·05%	—

* Indicates that cases are mentioned in text.

This condition of the fluid is similar to what has been described by French writers as "Syndrome de coagulation massive et de xanthochromie sans éléments cellulaires." This was described first in 1909 by Blanchetière et Lejonne, who claim that their case is the first of the kind on record. This was a man of 66, in whom paraplegia had developed somewhat gradually four months before he was examined. The cerebro-spinal fluid, examined repeatedly during six months from the time of the first examination until the death of the patient, was constantly yellow and highly albuminous. On standing it spontaneously formed a coagulum, and sometimes coagulated in the needle. It contained no cellular elements. At the necropsy a tumour of the dura, the size of a large olive, was found. This was situated on the dorsal surface of the cord at the level of the seventh, eighth, and ninth dorsal segments, and had led to some adhesion at this level between the dura and the cord.

A similar finding is recorded by Cooper in 1910, in a case of "localised segmental lesion of the cord."

> Macroscopically the fluid was clear, and of a yellowish-brown colour, looking like the clear serous fluid that is aspirated from pleural or peritoneal effusions. On standing a well-marked cobweb coagulum formed. The Noguchi and Nonne globulin tests were strongly positive, thick precipitates occurring. The Wassermann complement reaction was negative in fluid and blood. Microscopically, practically no cells were to be found either in the centrifugalised deposit or in the coagulum. No bacteria could be detected. Dr. Hyman, who operated on the case, and I came to the conclusion that we were dealing with a case of chronic compression of the cord, probably due to an intraspinal tumour, but an explanation of the findings in the cerebro-spinal fluid did not suggest itself. ..... At operation a strongly marked œdema of the membranes was found below the site of the tumour (an angiosarcoma). The transudate character of the fluid was thus explained.

Nonne, Apelt, Kleineberger, and Heilig have also collected cases of tumour of the spinal cord, with a similar condition of the fluid below the level of the tumour. In one of my cases (No. 56), where general carcinomatosis of the meninges was found at the necropsy, the fluid was yellow and highly albuminous, and contained very few cells, but it did not coagulate spontaneously. In two other cases (Nos. 57 and 58) the diagnosis of intraspinal tumour was made, or assisted, by the finding of a highly albuminous fluid, which was, however, free from any yellow colouration. In both these cases the high albumin content might not have been noticed in an ordinary examination, especially by an inexperienced observer, for lack of a quantitative standard.

TABLE II.—*Results Obtained by Noguchi and Esbach Methods.*

Case.	Nature of disease.	Albumin (N. = Noguchi, E. = Esbach).	Other characters.
	General Paralysis of the Insane.		
1	—	0·2 c.c. N.	Cells 170 to h.p. field.
2	—	0·3 c.c. N.	,, 10 + ,, ,, ,, 40 per c.mm.
3	—	—	,, 50–60 to h.p. field.
4	—	0·2 c.c. N.	,, 12–15 ,, ,,
5	Congenital.	0·4 c.c. N.	Cells more than 100 to h.p. field.
6	,,	0·25 c.c. N.	Cells 100–200 to h.p. field.
7	—	0·1% E.	,, 100–200 ,, ,,
	Tabes Dorsalis.		
8	—	0·2 c.c. N.	Cells 100 to h.p. field.
9	—	0·5 c.c. N.	,, 10 + ,, ,,
10	—	—	,, 30 ,, ,,
11	Gastric crises with no other signs.	0·6 c.c. N.	,, 100–150 ,, ,,
12	—	0·5 c.c. N.	,, 100 + ,, ,,
13	—	Slight.	,, 100 + ,, ,,
14	— (1) (2)	0·45 c.c. N. 0·4 c.c. N. (0·1% E.)	,, 50–60 ,, ,,
	Syphilitic Paraplegia.		
15*	—	4·5 c.c. N., E. 0·6%	Yellow fluid coagulating spontaneously into fine reticulum. Cells 50 to h.p. field.
16*	—	1·0 c.c. N.	,, 30–50 ,, ,, A viscid, slightly yellow fluid.
17	A very chronic case.	0·15 c.c. N.	Cells 9 to h.p field.
18	—	0·4 c.c. N.	,, 100 ,, ,,
19	A case after much treatment.	0·2 c.c. N.	,, 2–3 ,, ,,
	Gummata (cerebral).		
20	—	0·5 c.c. N.	Cells 200–300 to h.p. field. A yellow fluid with decayed red cells.
21	—	0·2 c.c. N.	Cells 70–100 to h.p. field.
22	—	0·25 c.c. N.	,, 80–100 ,, ,,
	Congenital Syphilis.		
23	Functional symptoms.	0·1 c.c. N.	Cells 15–20 to h.p. field.
24	Diplegia.	No increase.	,, 4–5 ,,
	Paraplegia.		
25	Syringomyelia.	0·1 c.c. N.	Cells 7 to h.p. field.
26	Gonococcal myelitis (?)	0·05 c.c. N.	,, 2 ,,
27	Primary lateral sclerosis.	—	,, 6 ,,
28*	Subacute combined degeneration during an attack of herpes zoster.	0·2 c.c. N.	,, 10–15 ,,
29	Syringomyelia.	No increase.	,, 10 ,,
30	Cerebral arterio-sclerosis, ? due to lead.	—	,, 4 ,,
31	Pseudo-bulbar paralysis.	0·1 c.c. N.	,, 3–4 ,,
32	Functional ?	0·2 c.c. N.	,, 12 ,,
	Disseminated Sclerosis.		
33	—	0·1 c.c. N.	Cells very few.
34	? syphilitic.	0·3 c.c. N.	Cells 6 to h.p. field.
35	—	†	,, 8 ,,
36*	In acute stage.	0·2 c.c. N.	,, 15 ,,
37	—	—	,, 4–6 ,,
38	—	0·2 c.c. N.	,, 5–6 ,,
	Cerebral Tumour.		
39	Glioma.	0·05 c.c. N.	Cells 2 to h.p. field.
40	+ Syphilitic endarteritis.	0·02 c.c. N.	,, 5–6 ,,
41	Glioma.	0·2 c.c. N. 0·05% E.	,, 4–8 ,,

† No ppt. with ammonium sulphate.

TABLE II.—*Results Obtained by Noguchi and Esbach Methods (continued).*

Case.	Nature of disease.	Albumin (N. = Noguchi, E. = Esbach).	Other characters.
	Tubercular Meningitis.		
42	— (1)	0·2% E.	Cells, lymphocytes and polymorph.
	(2)	0·2% E.	
	(3)	0·05% E.	
43	—	0·2% E.	Cells entirely lymphocytes.
44	—	0·2% E.	Sugar absent.
45	—	0·4% E.	Lymphocytes and polymorph. cells and tubercle bacilli.
46	—	0·1% E.	Polymorphs. and lymphocytes.
47	—	0·2% E.	All lymphocytes.
48	—	0·1% E. 0·5 c.c. N.	Lymphocytes only.
	Cerebro-spinal (meningococcic) Meningitis.		
49	—	0·1%	Polymorph. cells. Organisms mainly extra-cellular.
50	—	0·6%	Organisms extra- and intra-cellular.
	Hydrocephalus.		
51	Post-basic. (1)	0·15% E.	A few polymorph. Mainly lymphocytes. No organisms seen.
	(2)	0·1 % E.	
52	Cong. syphilis.	Considerable increase.	Lymphocytes 75–100 to h.p. field.
	After treatment.	0·05%	,, 15 to h.p. field.
53	Syphilitic. (Inactive pupils became active under treatment.)	0·1% E.	Fluid spurted in a continuous stream.
		0·4 c.c. N.	Cells 500–600 in h.p. field, completely filling the field.
	Cortical Hæmorrhage.		
54	Purpura neonatorum.	—	(1) Uniformly admixed blood
		—	(2) Blood in a yellowish fluid.
		—	(3) Yellowish fluid, no blood.
55	? Sunstroke, recovery in 5–6 days.	0·4 c.c. N.	A yellowish fluid with thick turbidity, containing red cells in proportion of 5 to 1 of leucocytes which were mainly polymorphonuclear. No organisms.
	Cases showing Abnormally High Albumin Content. *Spinal Tumours.*		
56*	Carcinomatosis of meninges.	1·4 c.c. N.	A clear yellow fluid. Sugar diminished. Cells 3 to h.p. field.
57*	Invasion of meninges by alveolar sarcoma.	1·1 c.c. N.	Clear white fluid. Cells 10–15 to h.p. field.
58*	Paraplegia, ? spinal tumour.	2·2 c.c. N.	A clear white fluid came out extremely slowly. Cells 4–5 to h.p. field.

* Indicates that case is mentioned in text.

CASE 57.—Aged 42. He had had an alveolar sarcoma of the left testis and abdominal glands removed three years before his neurological condition developed. A mass of glands close to the spleen could not be removed at the operation, but this mass diminished in size in the succeeding months. However, some two years after the operation these masses became noticeably larger, and very soon after he had symptoms of numbness and weakness of the extremities.

The patient was admitted to the National Hospital for the Paralysed and Epileptic, under Dr. Grainger Stewart's care, about three months after these symptoms began to show themselves. He then presented a flaccid paralysis of arms and legs, with slight sensory loss. His tendon jerks were diminished or lost, and except for some difficulty of sphincter control he resembled a case of multiple neuritis. Lumbar puncture gave 8 c.c. of clear watery fluid at normal pressure. The cell content was normal (10 to 15 lymphocytes) to the high-power field (× 350), but the albumin content was greatly raised; by the Noguchi test 1·1 c.c. precipitate was deposited from 2 c.c. fluid, and by the picric acid test 1·3 c.c. from the same quantity of fluid.

The paralysis after increasing for some weeks became stationary, and he was discharged three months later in much the same condition. A diagnosis of meningeal infiltration by the alveolar sarcoma was made.

CASE 58.—A girl, aged 15 years, was admitted to the National Hospital, under the care of Dr. J. A. Ormerod, in January, 1912. Fifteen months before this date she had had some pain in the back, and within a few weeks lost the use of her legs and the control of bowels and bladder. She attributed this to sleeping in a damp bed. She was treated at the Charing Cross Hospital by Dr. F. W. Mott soon after her illness started, but without much benefit.

On examination the patient showed a spastic paraplegia with complete anæsthesia up to the ninth dorsal segment. There was no tenderness or irregularity of the spine, and the Wassermann reaction of the

blood was negative. The cause of the paraplegia was very doubtful, as she showed no stigmata of congenital lues. Lumbar puncture was performed three weeks after admission, and a clear, colourless fluid was obtained, which came from the needle extremely slowly, only two or three drops per minute. It was impossible, even by raising the patient's head, to collect more than 4 c.c. of the fluid, and of this 2·0 c.c. were lost owing to the centrifuge jamming. The remaining 2 c.c. gave a precipitate of 2·2 c.c. by the Noguchi method. The cell content amounted to 4 to 5 cells to the high-power field (collected from 4 c.c. of fluid).

The diagnosis of compression of the cord, probably by a meningeal tumour, was then made, and an exploratory laminectomy advised, but the patient's parents would not give their consent to the operation.

This condition of the fluid (massive coagulation and xanthochromia) had been noted by Sicard and Descomps in 1908 as occurring in syphilitic meningitis, associated with a great increase in the lymphocyte content. Other French writers have reported cases. Mestrezat and Roger in 1909, and later Cestan and Ravant and others. The condition is fairly common and is probably well known to English neurologists. Of this I have seen two cases, one (No. 15) in whom the condition was very marked, another (No. 16) in whom it was very slight. It is considered to be due to loculation of the fluid by adhesions and thickening of the pia-arachnoid in the dorsal region of the cord, but the pathology of the condition is still obscure.

It may be noted that in both the French and American cases mentioned above the cord was compressed by a limited tumour, which in one case, at any rate, had produced meningeal adhesion, and thus cut off the lower portion of the subarachnoid space from free communication with the ventricular fluid. Apelt has recorded two cases of extradural tumour producing a similar effect on the fluid below their level, and Nonne one of intramedullary glioma. Heilig explains this effect on the spinal fluid by the vascular congestion which takes place below a lesion of the cord, the object of which may be the removal of the products of degeneration.

In one of my cases (No. 58) the tumour or compression was of a limited nature, but in the other two cases (Nos. 56 and 57) the condition of the fluid might have been explained by transudation from a vascular tumour infiltrating the meninges widely. The occurrence of a similar fluid in cases of cerebral tumour, as reported by Quincke and Vincent, indicates that the damming up of the free circulation of the fluid has much to do with the production of an albuminous yellow fluid in the portions of the subarachnoid space shut off from the ventricles, as it is very possible that in these cases the foramen magnum was plugged by the downward pressure on the brain stem forming the so-called "pressure cone." Whether this condition is compatible with life for a long enough period to allow the spinal fluid to undergo such changes is, of course, doubtful, but this hypothesis harmonises with the other causes—spinal tumour, syphilitic leptomeningitis, &c. At the same time, if this were the only explanation, one would expect a similar result in hydrocephalus, but although in such cases the spinal fluid must have been examined very many times this condition of the fluid does not seem to have been found.

It is possible that the presence of the tumour may in some cases of itself raise the albumin content, especially in the fluid shut up in a limited area of the subarachnoid space.

The yellow colouration seemed to me to be similar to what was found in cases of cortical hæmorrhage (see Table II.), but a full chemical examination was not carried out in any of the cases. French writers have examined the fluid in many cases of fracture of the skull, cortical hæmorrhage, &c., where this yellow colouration was present. Bard and Sicard consider it to be due to a special decomposition of the hæmoglobin of the blood. Gilbert and Hersher, Fuffier and Milian, on the other hand, consider it to be due to a pigment, serochrome, normally present to greater or less extent in the blood. That the pigment arises from the blood seems undoubted. In my cases the presence or absence of this pigment had little relation to the quantity of albumin. It was present with readings of 4·3, 1·4, and 1·0 c.c., and absent with readings of 1·1 and 2·2 c.c. The yellow colouration, therefore, does not seem to be an essential part of the syndrome.

It is interesting to observe from a practical point of view that the finding of a high albumin content in the cerebro-spinal fluid (above 1·0 c.c. from 2 c.c. by the Noguchi test) seems to be in almost every case an indication for operative treatment. Where the cause is syphilitic meningitis much good may be done by promoting free circulation of the cerebro-spinal fluid to the lumbar segments of the cord, and where a level of anæsthesia or paraplegia is found the operation is frequently followed by very good results. In such cases a cyst of fluid is often found at the operation, pressing on the cord and practically acting as a tumour.

Apart from syphilitic cases, the diagnosis is limited to spinal tumour, or other compression paraplegia—e.g., Pott's disease, fracture, dislocation, &c.—where the clinical history would make the diagnosis simple. Pachymeningitis cervicalis hypertrophica might possibly cause a similar condition of the fluid, and in this condition, as shown by Horsley's results, operative treatment is often extremely beneficial.

As a diagnostic sign of spinal tumour, examination of the cerebro-spinal fluid seems to have been too much neglected, and in the absence of other evidence may be of the greatest value. As compared with other methods of differential diagnosis in cases of paraplegia, lumbar puncture and examination of the fluid requires very little neurological experience, and is not beyond the scope of a general practitioner's laboratory.

In conclusion, my thanks are due to the medical staffs of the East London Hospital for Children, Shadwell, and of the National Hospital for the Paralysed and Epileptic, Queen-square, and to Dr. A. G. Barrs for permission to make use of their cases.

Bibliography.—1. Apelt: Berliner Klinische Wochenschrift, No. 33, 1910, S. 1540. 2. Bard and Sicard: Gilbert and Hersher: Cestan and Ravant quoted in "La Pratique Neurologique" (P. Marie). 3. Blanchetière and Lejonne: Gazette des Hôpitaux, 1909, vol. lxxxii., p. 1303. 4. Wm. Boyd: Brit. Med. Jour., 1909, i., 1352. 5. Cooper: Journal of the American Medical Association, 1910, p. 2298. 6. Heilig: Monatschrift für Neurologie und Psychiatrie, Heft 2, 1911, p. 95. 7. Kleineberger, Ibid., Okt., 1910, S. 346. 8. Mestrezat and Roger: Comptes Rendus de la Société de Biologie, 1909, vol. lxvi., p. 1000. 9. Nonne: Deutsche Zeitschrift für Nervenheilkunde, Band xl., Hefte 1–2, 1910, p. 161. 10. Quincke: Ibid., p. 78. 11. Sicard and Descomps: Gazette des Hôpitaux, 1908, vol. lxxxi., p. 1431. 12. Cl. Vincent: Informateur des Alienistes et des Neurologistes, No. 5, p. 147, May 25th, 1912.

THE QUANTITATIVE CUTANEOUS TUBERCULIN TEST.

(QUANTI-PIRQUET (Q P) FOR SHORT.)

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THE diagnosis of the existence in the body of tubercular disease in need of treatment is one of the most difficult of clinical problems, and the solution thereof would tend in no small measure to the simplification of the treatment of the disease. There is the need, on the one hand, of avoiding the fatal delay in waiting for striking symptoms to appear, when the time for efficient treatment may be past; and, on the other hand, of critically examining any criterion, such as the subcutaneous tuberculin test as commonly applied, to see whether the mesh is not too narrow, and latent and arrested cases as well as active ones included.

The tuberculin test should, however, if rightly applied, give the desired indication, for there seems no doubt that the grade of the reaction of the body towards tuberculin—its tuberculin-sensitiveness—is in general an index of the amount—i.e., the activity—of the disease present. The amount of this sensitiveness can in theory be measured by any of the tuberculin tests—conjunctival (Calmette), subcutaneous (Koch), cutaneous (von Pirquet), percutaneous (Moro), &c.—but the great superiority of the cutaneous test lies in the fact that it can be simultaneously applied in various strengths and a quantitative result obtained: (*a*) without waste of time; (*b*) with perfect safety; (*c*) without in itself altering what it is desired to measure; for any subcutaneous dose itself gives rise to an alteration—it may be temporary—in the sensitiveness.

Von Pirquet himself pointed out the possible quantitative application of his test, but it is comparatively recently that two Danish observers, Ellermann and Erlandsen [1] [2], have worked out an ingenious method in which the sensitiveness can be determined by a series of simple measurements and the result expressed numerically, thus affording an entirely objective standard of comparison from case to case. The original papers have not attracted the attention which they

TABLE I.

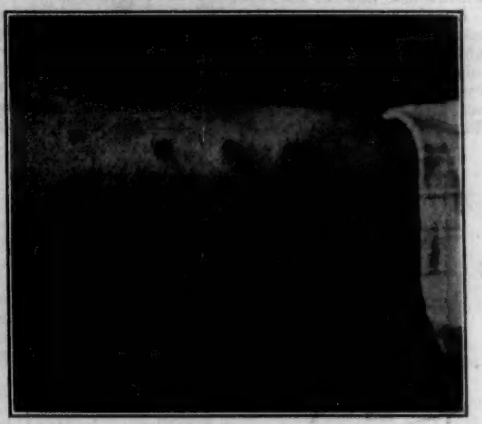
T	Size of papule in millimetres.			Difference in size between successive papules.*
	After 24 hours.	After 48 hours.	Average.	
64 per cent.	9	12	10½	3
16 ,, ...	7	8	7½	4
4 ,, ...	3	4	3½	3
1 ,, ...	0	1	½	
Sum of the four averages			22	
Sum divided by four = *Papule size*			5½	

* Average difference between successive papules = *Papule difference* (about) 3½.

N.B.—The figures denoting the *eight actual measurements* are given in italics; those denoting the *final results* for reference in the table in heavier type.

deserve, partly probably on account of the rather troublesome technique and partly because of the prominence of a repellent mathematical formula. The present writer has endeavoured to simplify the procedure to the utmost and to soften the ruggedness of the calculations.

FIG. 2.



Reproduction of photograph showing typical result of the test.

TABLE II.—(*Simplified from Erlandsen* [4]).

Papule size.	Papule difference.																			
mm.	5	4½	4¼	4	3¾	3½	3¼	3	2¾	2½	2¼	2	1¾	1½	1¼	1	¾	½	¼
8	115	129	147	170	200	240	298	379	504	706	1056									
7½	100	111	125	144	168	200	243	307	400	546	800	1270								
7	87	96	108	122	141	168	200	247	317	426	607	935	1603							
6½	76	84	92	104	119	138	164	200	252	331	460	687	1132							
6	66	72	79	88	100	115	134	161	200	257	348	503	800	1451						
5½	57	62	68	75	84	96	110	130	157	200	263	370	566	974	2018					
5	50	54	58	64	71	79	90	105	126	156	200	272	400	657	1270					
4½	44	46	50	54	60	66	74	85	100	121	151	200	283	441	800	1840				
4	38	40	43	46	50	55	61	67	79	94	115	147	200	296	504	1056				
3½	33	35	37	39	42	45	50	56	63	73	87	108	141	200	317	707	1803			
3	29	30	31	33	35	38	41	45	50	56	66	80	100	134	200	348	800	3200		
2½	25	26	27	28	30	31	33	36	39	44	50	58	71	90	126	200	400	1270		
2	22	22	23	24	25	26	27	29	31	34	38	43	50	61	79	115	200	504	3200	
1½	19	19	20	20	21	22	22	24	25	27	28	31	35	41	50	66	100	200	800	
1	16	16	16	16	17	17	18	19	20	21	22	23	25	27	31	38	50	79	200	3200
½	14	14	14	14	15	15	15	15	15	15	1	16	17	18	20	22	25	31	50	200

Technique.—The apparatus required is shown in the accompanying illustration (Fig. 1), and consists of a spirit-lamp, a scarifier, some alcohol, and four different dilutions

FIG. 1.

Apparatus for cutaneous tuberculin test.

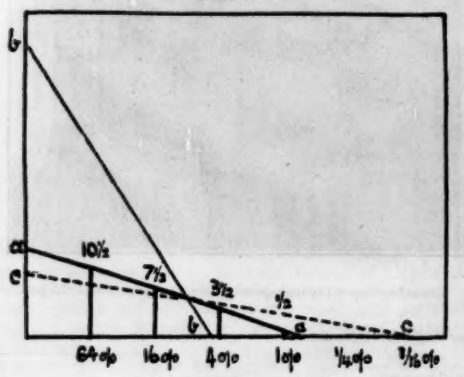
of old tuberculin (T)—viz., 64, 16, 4, and 1 per cent. The most convenient scarifier is the platinum spade used by von Pirquet. The skin of the forearm over the brachio-radialis muscle is rubbed with alcohol; the scarifier is held vertically between the thumb and forefinger, and with it four circular holes are drilled in the skin about an inch apart by a rapid twisting movement of the instrument on its long axis. The base of the pits should show vivid pink, but not actually bleed. The dilutions of T are made with the usual diluent of ½ per cent. phenol in normal saline. A drop is now applied to each scarification in turn, the weakest dilution distally (nearest the hand), so that a stronger solution shall not be carried by the lymphatics to a proximal spot. The excess of fluid is sopped up with tiny pieces of sterile wool and the moist spots left to dry for five minutes or so. The sleeve is then gently replaced and the patient instructed not to wash the forearm until the next day, to avoid rubbing or irritating it, and to present himself for observation after 24 and 48 hours.

Estimation of result.—A typical result is shown in Fig. 2. The diameter of the resulting papules is measured in millimetres after 24 and 48 hours and the measurements charted. Only the papule is measured, not the surrounding zone (if present) of hyperæmia, and the diameter of the scarification is subtracted as irrelevant. The figures are charted as shown (Table I.) and the resulting values of papule-size (5½) and papule-difference (3½) are looked for in the table

(Table II.), where they will be found to correspond to a sensitiveness value of 130 expressed thus: q P = 130.

Graphic representation of the calculation.—The sensitiveness value is really the inverse of the lowest strength of tuberculin which just gives rise to a reaction. Thus, if 5 per cent. be this strength, 100/5 or 20 is the sensitiveness value; or if 1 per cent. T just gives a reaction, q P = 100. The result can also be easily expressed graphically by marking (Fig. 3) the various concentrations at equal lengths along

FIG. 3.



Graphic representation of result.

the base line, erecting perpendiculars proportional to the papule-size, and joining the ends of these verticals by a line *ac* which intersects the base-line at a point representing the vanishing point of the reaction or the strength just producing a reaction—in this case about 3/4 per cent. giving q P = (100 ÷ 3/4) or about 130, as we have seen. The diagram illustrates another point—viz., that the papule-*difference* is the more important factor in the result, for with the same average papule-*size* the two lines *bb* and *cc* will give tuberculin percentages varying from 5 to 1/16, or respectively q P = 20 and q P = 1600. Hence the result is more largely determined by the relative than the absolute size of the papules, and for this reason non-specific factors, such as vascularity or irritability of the skin, are not likely to affect the final result, although they may influence the absolute measurements.

Postulates.—The method assumes the possibility of measuring the papules accurately, and this is, in point of fact, not difficult to do after the observer has made up his mind what degree of induration he requires in order to count as a reaction. It will be in many cases an assistance to close the eyes when feeling the spots with the finger in order to make certain that there is real induration and not merely hyperæmia. The accuracy of the result is greatly enhanced by the fact that eight measurements are made where two would in theory suffice, and a fair average thus obtained. The calculation further assumes that as the percentage of tuberculin used increases *geometrically*, the size of the papule only increases *arithmetically*. For instance, with dilutions 64, 16, 4, and 1 per cent, the papules may be 4, 3, 2, and 1 mm. And this relation is established both by the average of numberless actual measurements as well as by its harmony with Weber's law. It is very striking how when the reaction is positive the papules, regarded as flat discs, fit evenly between two (imaginary) converging lines, and how a negative test is at once apparent by the discs (in this case of traumatic hyperæmia only) being all of equal size.

Interpretation of the result.—The sensitiveness value having been obtained, what is its clinical significance? Ellermann and Erlandsen suggest that the value 100 is the crucial one clinically; below this point are the inactive, above it the active cases. Mirauer[5] would set the value somewhat lower, between 100 and 50. In the writer's experience values above 100 were all suggestive of active disease, values below 50 of latent or arrested disease.

A few examples may serve to illustrate this. A young man was sent to the Alps for a change on account of nervous exhaustion. He had had a slight hæmoptysis a twelvemonth previously and was looking very seedy. Careful examination of the chest revealed no definite physical signs; q P, however, gave a value of 112, and another hæmoptysis occurred almost immediately, followed by a tubercular pleurisy requiring rest in bed for months. Now, after a successful course of tuberculin, health is entirely restored and q P = 32.

A brother and sister both had very meagre physical signs. The brother gave q P = 141, developed a small pneumothorax, and only began to respond to treatment after two months' complete rest in bed; the sister with q P = 80 was able almost from the first to take part in winter sports.

Two cases with basic pulmonary signs of doubtful nature, both suspected of being tubercular, had q P = 0, and the condition nearly cleared up with abundant exercise and pneumococcus vaccine.

In five medical men taking a holiday in the Alps, q P was respectively 20, 28, 53, 22, and 0. Only one had ever had any symptoms of tuberculosis.

Application of the quanti-Pirquet.—The application of the determination of q P in practice is: (1) first and foremost, in the deciding of the question whether an existent tuberculosis is in such a condition as to require treatment—what may be called the clinical diagnosis of tuberculosis; (2) as a guide to the progress of a case—if favourable, q P soon falls below the crucial limit; (3) in concluding or excluding the presence of tuberculosis in disease or ill-health where the diagnosis is doubtful—e.g., in bronchial asthma, bronchiectasis, enlarged glands, &c.; (4) in determining the initial dose of tuberculin for a therapeutic course (where q P is high and the sensitiveness accordingly great, a small dose should be chosen to begin with); and (5) in standardising any particular preparation of tuberculin[3] and comparing two or more preparations.

Fallacies.—In drawing a conclusion from the value of q P certain points should be borne in mind: (1) the Pirquet reaction tends to disappear in advanced cases of tuberculosis and in miliary tuberculosis of rapid course; (2) it is constantly absent during the first ten days of measles and in some other transient acute conditions; (3) q P tends to remain high long into convalescence from bone and glandular tuberculosis;[3] and (4) in the negative phase of a tuberculin inoculation q P may be very high, but it is remarkable how *rapidly the large papules disappear as the positive phase sets in.*

Conclusion.—The determination of q P gives the degree of tubercular sensitiveness at the moment of examination and is a datum of great importance for diagnosis and as a guide to treatment.

Bibliography.—1. Ellermann and Erlandsen: Ueber quantitative Ausführung der kutanen Tuberkulinreaktion, Deutsche Medizinische Wochenschrift, 1909, xxxv., 436. 2. Ellermann and Erlandsen: Das Gesetz der kutanen Tuberkulinreaktion und ihre Anwendung bei der Standardisierung von Tuberkulin, Brauer's Beiträge zur Klinik der Tuberkulose, 1910, xvi. 1. 3. Erlandsen and Petersen: Untersuchungen über die diagnostische Bedeutung des Tuberkulintiters, ibid., 1910, xvi., 291. 4. Erlandsen: Tabelle für die Restimmung des Tuberkulintiters nach Ellermann-Erlandsen, ibid., 1911, xviii., 419. 5. Mirauer: Ueber die kutane Tuberkulinreaktion, insbesondere die Ergebnisse von Impfungen mit abgestuften Tuberkulinkonzentrationen, ibid., 1911, xviii., 51.

Arosa, Switzerland.

THE TREATMENT OF FLAT FOOT.

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IT is proposed in this paper to describe a treatment suitable, with but slight modification, for all cases of static foot trouble (flat foot),[1] from the early cases which are often described as "weak ankles" to the most severe cases where there is old-standing structural change. It has hitherto been the custom to describe various grades of flat foot, with a different treatment for each; thus, bathing with sea-salt, or massage for the slight cases, valgus pads and wedges for the moderate ones, irons and T-straps and frequent wrenchings for the severe cases, and extensive surgical operations for the very worst cases of all. With the exception of wedges, applied to the boots in a special manner, the whole of this treatment may well be discarded.

In common with many other acquired deformities, the first change is a postural one; when the patient raises his heels from the ground, so as to stand on his toes, the arch is restored. It is only after the postural change has existed

[1] Tubby: Deformities, 1912, vol. i., p. 674.

a considerable time that structural change occurs. Thus the cases can be at once divided into two classes: those in which the deformity entirely disappears when the patient stands with his heels raised, and those in which some or all of the deformity persists. For convenience, these may be described respectively as "postural" and "structural" cases, though it must be understood that in the "structural" ones much of the deformity may be "postural."

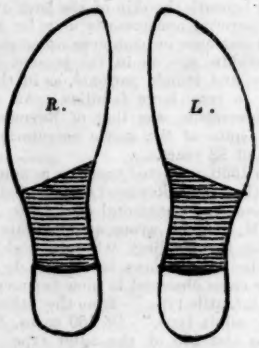
In this connexion mention must be made of those unusual cases where there is spasm of the peronei muscles. In these the spasm entirely disappears after a week of absolute rest and the foot returns to its normal shape; they must, therefore, be put in the "postural" class. Flat foot complicated by spasm of the peronei has by some been regarded as a stage through which all cases must inevitably pass as they progress from bad to worse, but I am convinced that this is not so. Flat feet are very common; in the last five years I have examined very many hundreds, and in only three cases was there spasm of the peronei muscles. It must be looked upon as a comparatively rare complication. The following outline of treatment may be pursued with absolute confidence, resulting in relief to the patient and credit to the surgeon.

Object of the treatment.—In the "postural" cases, to produce complete cure. In the "structural" cases, to abolish all pain and discomfort, to cure the "postural" element of the deformity, if present, and to arrest further increase in the "structural" element.

The treatment consists of: (1) attention to footwear; (2) attention to position in standing and walking; and (3) regular daily exercises.

1. *Attention to footwear.*—Whether boots or shoes are worn, whether they button or lace, they must be the shape of the feet. If this primary essential is not secured the whole treatment may as well be abandoned. To bring this about it is not at all necessary to wear boots of an ugly shape. The inner side of the boot, where the big toe lies, is kept straight, so that the end of the boot is opposite the big toe, and not opposite the second or third toe. (Fig. 1.)

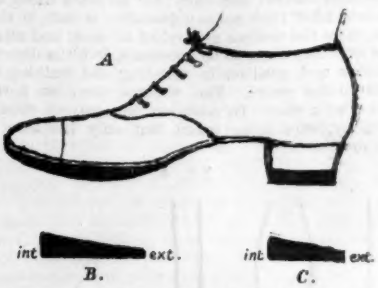
FIG. 1.



The soles of a pair of properly made boots. Note that where the great toe lies the boot is kept straight, also that the end of the boot is opposite the great toe.

This is to ensure that the big toe is not pushed out against the other toes and has plenty of room in which to act. The soles should be a sixth to a fourth of an inch thick, the heels broad, an inch or less in height. If the degree of flat foot be anything more than the merest trace, mechanical means are utilised to throw the weight of the body, distributed down the leg, slightly *outside* the centre of the ankle-joint. This is effected by thickening the sole and heel of each boot along its inner side by ¼, ⅓, or ½ inch, the amount depending upon the severity of the case; the worse the case the greater the thickening. The additional leather is in the form of a wedge, with its base to the inside and its apex to the outside of the foot, so that the extra thickness on the inside fades off to nothing on the outside. Not only does it fade away outwards towards the outside, but also forwards towards the tip of the shoe, from a point situated about an inch behind the tip. (Fig. 2.) When viewed from in front the wedge should scarcely be seen. The extra thickening is applied by a bootmaker to a boot of the shape described; there is no need to have a surgical boot made, and no need to have the instep filled in by a continuation forwards of the heel.

FIG. 2.

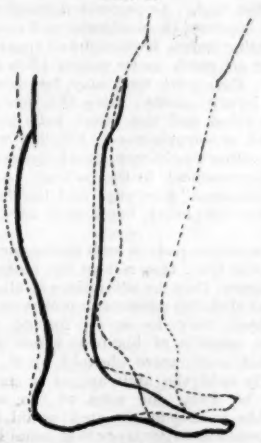


A, A shoe for the right foot with wedged sole and heel, seen from the inside. B, C, The sole and heel repectively, seen in transverse section.

2. *Attention to position in standing and walking.*—*Standing:* The patient must always stand on both feet with the toes slightly turned in and the heels slightly turned out. He must never stand with the toes turned out, or on one foot to rest the other. Every now and then he must raise the heels just clear of the ground—that is, stand on the toes sufficiently to bring all the muscles of the foot into action. Whenever the feet begin to ache he should do this. In addition, he should stand with the feet very slightly turned over on their outer border. *Walking:* He must walk with the feet pointing straight forwards—never with the feet turned out. If the feet are hurting, he must walk all the time very slightly on tip-toe—that is, with the heels just off the ground. It is a good plan while indoors to walk on tip-toe all the time.

3. *Regular daily exercises.*—The exercises, to be done the first thing every morning, preferably with the shoes off, are two in number: 1. Standing, *alternately heels raising and toes raising.* (Fig. 3.) To steady the body, both hands touch

FIG. 3.



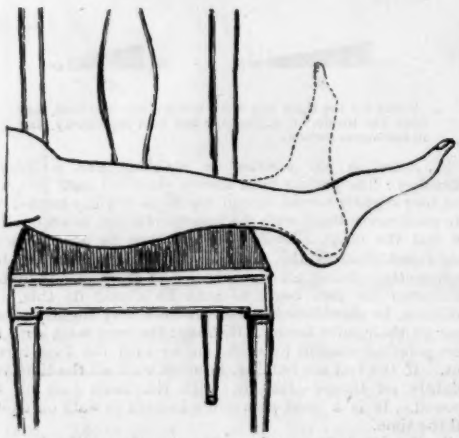
The dark outline shows the foot before the exercise begins, the dotted outlines the position of the foot at the limit of "heel-raising" and "toe-raising" respectively.

the mantelpiece or wall. The heels are slowly raised from the ground, and slowly lowered; then the toes are slowly raised and slowly lowered—the exercise thus consisting of four distinct movements. The feet are kept slightly turned in, and slightly turned over on their outer border, all the time. The exercise is repeated from 50 to 100 times. 2. Sitting on one chair, with the foot projecting over the edge of another, the calf of the leg resting on the seat. (Fig. 4.) Keeping the knee still, the foot is slowly *circumducted* to its full extent in all directions, down, in, up, out, 50 times; then down, out, up, in, 50 times. If

possible, the circumduction is to be done with the foot in a slightly varus position the whole time. This is repeated with the other foot.

These directions must be followed uninterruptedly, and the exercises carried out daily, for at least three months, and as long after that as any disability is felt in the feet. In most cases the wedges give relief at once, and after three months exercises cease to be necessary, but the directions as to footwear and position in standing and walking must be adhered to for years. The wedges may, as a rule, be omitted after a year. In addition, the patient should take to bicycling, care being taken that only the toes rest on the pedals.

FIG. 4.



The position of the leg and foot for performing "circumduction." The dark outline shows the foot at the limit of plantar-flexion, the dotted outline the limit of dorsi-flexion, after the foot has moved through a semi-circle.

Remarks.—This treatment removes the pain and discomfort of flat foot. As regards deformity, it cures the slight cases, improves the moderate, and prevents the severe ones from getting worse. Even stiff and apparently hopelessly deformed feet get much more supple after a few months of this *régime*. The good that may be done by irons and T-straps is, in my opinion, more effectually done by using the wedged soles, and the latter have the advantage of cheapness and unobtrusiveness. Forcible wrenching under anæsthetics, either single or repeated, does not result in any permanent improvement to the patient. A few cracks are heard as "adhesions" give way, and the feet become more supple for the time being, but a week later they are as bad as ever.

I do not use valgus pads or arch springs or sole plates. In some cases, it is true, they relieve the patients' symptoms; in many, however, they do not relieve at all, and frequently are so painful that the patients cannot wear them. Where they do relieve, they do so by forcing the patient to walk on the outsides of his feet, which is done just as efficiently and much more cheaply by the wedged soles. If they really held the arch up, as is claimed for them, they would be doing the work of the muscles, and at the end of the treatment the arch would be weaker than ever. Furthermore, larger boots than usual have as a rule to be worn with them, and they have to be worn for years, during which time no active attempt is being made to improve the patient; they are at best palliative, not curative.

I have no experience of operative interference in severe cases; though it might improve their form, it is difficult to see how it can be expected to improve their function.

The cases complicated by spasm of the peronei occur so few and far between that I have not yet been able to satisfy myself as to the best form of treatment. I think, however, it will eventually consist of a period of rest in some splint to get rid of the spasm, followed by the gradual institution of a course of treatment such as I have described.

It will be noted that no allusion has been made to massage. It should be reserved, together with radiant heat baths, for those cases complicated by rheumatoid arthritis; these are, however, outside the scope of this paper.

Harley-street, W.

COARCTATION OF THE AORTA IN AN ADULT, WITH DEATH DUE TO THE RUPTURE OF AN ANEURYSM IN THE NECK.

BY F. PARKES WEBER, M.D. CANTAB.,
AND
F. W. PRICE, M.D. EDIN.

COARCTATION of the aorta—that is to say, stenosis of the aorta at or just below the junction of the ductus arteriosus with the aorta (i.e., in the region of the aortic "isthmus")—when it is present in adults and in children who have survived the period of infancy, is supposed to have arisen gradually after birth in association with the closure of the ductus arteriosus. Usually in such cases an elaborate system of arterial collateral circulation has developed so that the arterial blood from the upper part of the body—that is to say, from the great arteries given off by the aorta above the site of obstruction—can pass by enlarged anastomosing branches to the lower part of the trunk and the lower extremities. "The blood from above," says A. M. Gossage,[1] "passes by the internal mammary, transverse cervical, superior thoracic and subscapular branches of the subclavians, the long thoracic and subscapular branches of the axillaries, to form anastomosis with the superficial epigastric branch of the femoral and with the thoracic arteries. The blood for the lower limbs is probably mainly conveyed by the thoracic arteries to the abdominal aorta, but owing to the number of small channels pulsation is lost before the abdominal aorta is reached." No wonder, therefore, that in typical cases of the "adult type" a number of thickened tortuous arteries can be both seen and felt pulsating beneath the skin of the back and front of the trunk. The arterial anastomosis may be so efficient that patients with extreme or complete coarctation of the aorta may live to middle age, as in the present case, or even to great old age, and female patients, as in the present case, may be able to rear large families. An early and most interesting observation was that of Reynaud[2] (1828) on a man who, in spite of the aortic coarctation, lived to the advanced age of 92 years.

E. Barié, in 1886, collected together a number of different observations (including Reynaud's case) under the heading, "Du Rétrécissement Congénital de l'Aorte Descendante."[3] In 1903 L. M. Bonnet wrote an elaborate paper on the subject[4] under the heading, "Sur la Lésion dite Sténose Congénitale de l'Aorte dans la Région de l'Isthme." He separated the cases observed in new-born children—that is to say, the "infantile type"—from the other cases—that is to say, the "adult type." Of 160 cases, 55 were of the infantile type and 105 of the adult type. Amongst the adult series there seem to have been 10 cases in which aortic aneurysm of some kind was said to have occurred.

Maud E. Abbott[5] (1908) succeeded in collecting 38 more cases, and by adding these to Bonnet's 160 cases, she obtained a total of 198 cases for her analysis. Of these cases 129 occurred in patients over one year old. Seven patients died in the sixth, and 6 in the seventh decade of life, whilst 1 (Reynaud's case, already alluded to) lived to the age of 92 years. More than half of the remainder (56 cases) died between the ages of 20 and 40 years. In 121 of the 129 cases the sex was known; it was male in 81, female in 40. There was some evidence of collateral circulation in 56 of the 129 cases, but the particular

[1] A. M. Gossage: Proceedings of the Royal Society of Medicine (Clinical Section), 1909, vol. ii., pp. 210-213.
[2] Reynaud: Journal Hebdomadaire de Médecine, Paris, 1828, vol. i., p. 161, illustrated with a plate. The old man's heart was said to be of normal volume.
[3] Barié: Revue de Médecine, Paris, 1886, vol. vi., pp. 343, 408, 501.
[4] Bonnet: Revue de Médecine, Paris, 1903, vol. xxiii., pp. 108, 255, 335, 418, 481.
[5] M. E. Abbott: On Coarctation of the Aorta, in her article on Congenital Cardiac Disease; in Osler and McCrae's System of Medicine, London, 1908, vol. iv., pp. 405-416.

branches involved and the size of the anastomotic arteries varied greatly even in cases in which the aortic stenosis was extreme. The heart was stated to have remained normal throughout life in 9 of the 129 cases, including Reynaud's case of a man aged 92 years (already referred to); Brunner's case, in which there was an actual obliteration of the aortic channel at the insertion of the ductus arteriosus; and Dumontpallier's case (the patient was aged 39 years), in which the aortic stenosis was due to a septum with a central aperture, 13 mm. in diameter. Seventy-seven cases showed marked hypertrophy and dilatation of the heart, but 44 of them were complicated with chronic valvular lesions or other cardiac defects, which might have given rise to cardiac hypertrophy. Hence it appears that hypertrophy of the heart is not an invariable consequence of aortic coarctation. According to Abbott, aneurysm of the aortic arch occurred in only 9 of the 129 cases, and in 5 of them it was of the dissecting form; rupture of the aorta occurred in 12 cases, of the ascending aorta in 7 cases, and at the site of the stenosis in 5 cases.

Amongst still more recent contributions to the literature of the subject we may mention accounts by A. M. Gossage[6] (a boy, aged 17 years, with characteristic arterial collateral circulation), R. O. Moon[7] (with necropsy), A. Brown[8] (with large tortuous superficial arteries variously disposed over the right thoracic wall), Herbert French[9] (a doubtful case), and Hugo Sella[10] (extreme stenosis of the aortic isthmus in a man, aged 43 years, with perforation of a dissecting aortic aneurysm into the pericardium). George Carpenter[11] has described a case of coarctation of the aorta with great enlargement of superficial arteries in a boy, aged 5 years, who was believed to have inherited syphilis. We should further like to include as an example of the "adult type," with extensive arterial collateral circulation, the case of a woman, aged 55 years, shown by F. Langmead at the Clinical Section of the Royal Society of Medicine on May 31st, 1912, for we cannot think of any other explanation to account for the presence of the large pulsating superficial arteries on the back of her thorax.[12]

We regard the present case as worthy of record in spite of the fact that no post-mortem examination was obtained, and we have to thank Dr. T. N. Kelynack and Dr. James Mackenzie for their kind permission to publish it. The patient, a Jewish married woman, aged 56 years, was admitted to the Mount Vernon Hospital, Hampstead, on Aug. 24th, 1910. She had had 11 children (seven of them, she said, were still living), the last one 12 years previously, when she herself was 44 years old. She had lived a very active life (housework, &c.), and had apparently enjoyed good health, but since the birth of her last child she had felt less strong. During the last three or four years she had felt weaker, had been getting thinner, and had experienced pain in her chest on exertion. Two years ago she had noticed a lump (doubtless the aneurysm) on the right side of her neck, in front, just above the clavicle. She said that she suffered from occasional feelings of giddiness and headache. She had taken very little alcohol, had never vomited or spat blood, and had not suffered from digestive troubles.

When in the hospital the most remarkable point about the patient was the presence of numerous enlarged and tortuous superficial arteries at various parts of the trunk, neck, and limbs, but especially remarkable in both axillæ and on both sides of the back in the infra-scapular regions. The superficial arteries on the trunk could be felt pulsating under the skin, and some of them were so enlarged as to be nearly as thick as a man's little finger. There was evidently considerable atheromatous change in addition to dilatation and hypertrophy. Above the right clavicle there was a pulsating aneurysmal swelling of about the average size of a hen's egg. Examination of the chest showed the cardiac apex-beat was displaced outwards to the left mid-axillary line in the seventh intercostal space. A systolic murmur could be heard at the apex and over the central and pulmonary regions. The systolic brachial blood pressure varied from 230 to 290 mm. Hg. Dr. Price found that there was an auricular wave in the venous tracing. Roentgen ray examination of the chest showed the aortic arch or part of the aortic arch apparently not continued into the descending aorta. The upper part of the heart seemed to be broader than usual. The lungs and diaphragm appeared normal on the screen. No pulsation could be felt in the abdomen to suggest the presence of an abdominal aorta. The abdomen was pendulous owing to flaccidity of its walls. There were varicose veins of the lower extremities (which she thinks developed after the last pregnancy) and dilated veins in front of the chest. Blood examination: hæmoglobin, 92 per cent.; red cells, 5,104,000 in the c.mm. of blood; colour index, 0·8; white cells, 7840 in the c.mm. of blood. The differential count of the white cells gave: polymorphonuclear neutrophiles, 50 per cent.; lymphocytes, 40 per cent.; transitionals, 5 per cent.; eosinophiles, 4 per cent.; and mast cells, 1 per cent. The red cells appeared normal; no nuclear red cells were seen.

The patient was kept a few weeks in the hospital for observation and then went home. After she left the hospital the aneurysmal swelling on the right side of the neck is said to have enlarged until it was nearly as large as a baby's head, and the patient suffered great pain in her right arm (doubtless a pressure effect of the aneurysm). We were informed that she died at her home during the third week of December, 1910. The aneurysm on the side of her neck, after someone had been feeling it, burst externally, the blood squirting out to the other side of the room. She immediately became unconscious and remained so till her death, six hours later. There was no necropsy.

[6] Gossage: Loc. cit.
[7] R. O. Moon: THE LANCET, June 8th, 1912, p. 1531.
[8] A. Brown: THE LANCET, June 22nd, 1912, p. 1719.
[9] H. French: Transactions of the Medical Society of London, 1911, vol. xxxiv., p. 426.
[10] H. Sella: Ziegler's Beiträge zur Pathologischen Anatomie und zur Allgemeinen Pathologie, Jena, 1910, vol. xlix., p. 501.
[11] G. Carpenter: Reports of the Society for the Study of Disease in Children, London, 1908, vol. viii., p. 158.
[12] F. Langmead: Proceedings of the Royal Society of Medicine (Clinical Section), London, 1912, vol. v., pp. 194–197 (with discussion).

A CASE OF LARGE CASEOUS TUBERCLE OF THE MYOCARDIUM.

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AND
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A SECONDARY affection of the myocardium in general tuberculosis is not so uncommon as one is led to believe, but that of the large caseous type is but seldom met with in the post-mortem room. Kaufmann, in his "Lehrbuch," speaks of it as "rare," and Babcock, in Osler and Macrae's "System of Medicine," as "exceedingly rare." Allbutt, Nothnagel, Hektoen, and Coats all regard it in like fashion. The ventricles are considered more frequently affected than the auricles, and of the former the left chamber oftener than the right. In the case here recorded the auricles appeared to the naked eye uninvolved, and the process was more or less equally distributed throughout the walls of both lower cavities. Occasionally secondary tuberculosis of the heart may result by direct extension from adjacent parts or by lymphatic spread. In this it was fairly clear, notwithstanding the involvement of mediastinal glands and pericardium, that infection had occurred per sanguinem.

The patient, aged 24, was admitted to Horton Asylum on July 12th, 1905, suffering from dementia præcox, with paranoidal symptoms mostly in evidence. She was entered as being in fair bodily health: her lungs were sound and her cardiac dulness normal; there was slight accentuation of the second aortic. Before admission she was said to have had fainting attacks and to have suffered from coldness and blueness of the extremities. The physical condition appears to have remained unaltered for some time; mentally she ran the course usual in such cases. In the early part of 1910 she was put to bed because of swollen feet. Her pulse was then described as "feeble and irregular," but the heart sounds were pure. Examination of the lungs revealed phthisis of both apices. She was placed on the verandah, and in addition to other treatment received regular injections of Beraneck's tuberculin. The pulmonary condition advanced rapidly, however, and on June 24th only the right lower lobe was unaffected, and in parts of the left lung cavitation had occurred. On August 12th, when the chest was being examined, it was discovered that she had fractures of the third and fourth right ribs. There was a history of some recent slight injury, but the skin had never been discoloured; hence it was thought likely that the fractures were secondary

to some pathological (tubercular) change. The patient's condition gradually became worse, peritonitis with ascites supervened, and she died on Dec. 30th.

The following are the salient features of the post-mortem report:—Brain: Being from a case of dementia præcox this was sent to the Claybury laboratory for examination. The pia arachnoid had been noticed to have a finely granular appearance, but Dr. F. W. Mott reported that "no tubercle bacilli or evidence of tubercle could be found" in the meninges or the organ itself. Thorax: Complete fractures of second, third, and fourth right ribs, partial of fifth; these were all due to the presence of tubercular deposits. The right pleura showed general adhesions. The left pleura contained about a pint of clear serum; there were adhesions at the apex. Lungs: The right lung was semi-

A, B, Large caseous masses in wall of right ventricle, and, C, D, in left ventricle. E, E, and F, Thickened pericardium. The heart has been so dissected for photographic purposes that the relation of aorta to right ventricle appears anomalous.

collapsed, the upper lobe being full of small tubercular foci; a fair amount of healing had occurred. The left lung was also collapsed; both lobes showed extensive phthisis with cavity formation. Pericardium: Layers thickened and adherent. Heart: Weight, 320 grammes. The right auricle was empty. The tricuspid valve admitted three fingers; the curtains appeared to be normal. Embedded in the anterior wall of the right ventricle was a caseous mass 1¼ inches in length and about 1 inch in depth; it was quite firm to the touch and was surrounded by a thin band of fibrous tissue. (See Figure.) Towards the apex of the heart, and separated from this mass by a strand of muscle, was a deposit of similar appearance and of the size of a hazel-nut. In the anterior wall of the left ventricle were two other masses practically converging, but well defined from the surrounding muscle by a fibrous zone; one of these was ½ inch circular, the other somewhat smaller. The mitral valve admitted two fingers and was of normal structure. The aorta showed a few isolated patches of thickening. The coronary openings were quite patent. The mediastinal glands were enlarged and some caseous. Abdomen: Peritoneal cavity contained a large amount of straw-coloured serum and the surface of the membrane was covered with tubercular granulations. Liver: Weight, 1820 grammes. The right lobe was adherent to the diaphragm. Well-marked amyloid disease and numerous miliary tubercles were present. Kidneys: Capsule thickened but non-adherent; surface roughened. Substance showed waxy change and a few tubercle bacilli foci. Spleen: Weight, 330 grammes; of "sago" type. The pancreas was congested. The adrenals were normal to the naked eye. The stomach was dilated. Small intestine: An occasional tubercle was visible from the serous surface. Mucous membrane stripped in places and some submucous hæmorrhage was present but no actual ulceration. The other organs were apparently normal.

Microscopical examination of the diseased myocardium showed the appearances usual in tuberculosis, but the patch of muscle between one of the deposits and the pericardium was found to be free from giant and epithelioid cells. In the liver, spleen, and kidneys advanced amyloid changes were present associated with numerous tubercular foci.

Considering the extent of the disease in the heart itself it is surprising how few cardiac symptoms the patient presented. It is improbable that that organ was affected when she was first put to bed because of œdema of the feet, for she had suffered from this before admission, and it is much more likely to have been due simply to the katatonia she at times showed. Præcordial pain or distress was never a feature of the case (she was not too demented to have complained of it), and there was no record of any syncopal attacks during the 12 months anteceding her death. Throughout the whole of the illness cardiac dulness remained within normal limits, and, while her pulse was always feeble and irregular, no murmurs were at any time detected. Clifford Allbutt says: "Rarely do solitary tubercular masses in the muscular walls of the heart give rise to any functional disturbance." Here the masses were not solitary but several, and symptoms and signs still practically in abeyance.

We are indebted to the medical superintendent, Dr. J. R. Lord, for permission to publish the case, and to Mr. E. S. Dean, laboratory attendant, for the photograph which accompanies it.

NOTE OF A CASE OF VERY EXUBERANT GROWTH OF MOLLUSCUM CONTAGIOSUM.

BY WILLIAM CALWELL, M.D. R.U.I.,

PHYSICIAN TO THE ROYAL VICTORIA HOSPITAL, BELFAST, IN CHARGE OF THE DERMATOLOGICAL DEPARTMENT.

A GIRL, aged 17 years, was admitted to my wards on March 30th, 1912. She had some enlarged submaxillary glands, discrete and painless, probably tubercular, and some right apical cirrhosis, but no pain, no temperature,

FIG. 1.

Condition before treatment.

and no symptoms pointing to active pulmonary mischief. The condition of her face will best be understood by a study of the first photograph. (Fig. 1.) The nature of the mass of

growths at the root of the nose was rendered evident by the typical molluscum contagiosum nodules which were found on the chin, lip, forehead, cheek, in front and behind the left ear, and on the nape of the neck. The larger lesions exuded on pressure a pure white cetaceous-like material which in some places had escaped already and hardened into stunted, irregular, easily removable horns. There was a rather indefinite history of two to three months' growth.

The patient was put under an anæsthetic and the mass was removed nodule by nodule with a pair of scissors curved on the flat. Each nodule was then found to have a down-growth so as to give a somewhat dumbbell-shaped structure, and the contents and a clearly differentiated lining had to be removed by a Volkmann's spoon. The wounds healed without trouble. A few smaller papules that had been missed were touched a few days later with some CO_2 snow; the staining left after the wounds and freezing disfigure the second photograph (Fig. 2), and since her departure from

FIG. 2.

Condition after treatment.

hospital a small linear keloid scar has formed under the inner part of the lower eyelid running up to the root of the nose. The carbonic acid snow seemed to shrivel up the nodules, but snipping off with scissors on the whole gave the best and quickest result.

Dr. J. Little, assistant pathologist to the hospital, cut some beautiful sections which showed the typical structure of the lesion and the so-called "molluscum bodies." The histological diagnosis was kindly confirmed by Professor W. St. C. Symmers.

THE CHAIR OF PATHOLOGY IN THE UNIVERSITY OF EDINBURGH.—Professor J. Lorrain Smith, F.R.S., who has occupied the chair of Pathology in the Victoria University of Manchester since 1904, has been appointed to the chair of Pathology in the University of Edinburgh, which will be vacated by Professor W. S. Greenfield at the end of September. Professor Lorrain Smith is the representative of the University of Manchester on the General Medical Council, and has held many important positions in connexion with pathology. He studied under Professor Burdon Sanderson at Oxford and under Professor C. S. Roy at Cambridge, where he held the John Lucas Walker Studentship in Pathology.

Reviews and Notices of Books.

The Extra Pharmacopœia. Revised by W. HARRISON MARTINDALE, Ph.D., F.C.S., and W. WYNN WESTCOTT, M.B. Lond., D.P.H. Fifteenth edition. In two volumes. London: H. K. Lewis. 1912. Vol. I., pp. 1114–xxxii.; Vol. II., pp. 370–viii. Price 21*s.*

THIS new and enlarged edition of "The Extra Pharmacopœia of Martindale and Westcott" presents an astonishing wealth of material within boundaries, whose narrowness is equally astonishing. Volume I. contains an index of about 12,000 items, and yet measures only 6¾ × 4¼ × 1 inches, and weighs under 16 oz., whilst its contents include not only new therapeutic agents, drugs, and preparations, but also the latest information concerning methods of administration, doses, uses, and so forth, as illustrated in the chapters on iontophoresis, nutrimenta, organic arsenic compounds (salvarsan), radiology, radium, radium emanation, thorium, vaccine therapy, organotherapy, and sterilisation applied to pharmacy.

A detailed review reveals the authors as masters of the art of accurate compilation and possessing a shrewd judgment in the choice of materials. There is not a page that does not bear evidence of a thorough search amongst the literature of the subject, and this records the latest matters of medical and pharmaceutical importance. The references are most valuable, in particular to the medical practitioner, who will find in the pages annotations of recent therapeutic experiences taken from our own columns and many other medical journals. The volume is at once an epitome of the rapid progress which medicine and pharmacy have made and a signpost indicating the directions which these advances are taking. As examples of the thorough-going character of the work done we may set out the following. In the general materia medica section contained in the first volume we find an account of the new compounds of aceto-coumaric acid (tylmarin-quinine, tylmarin-sodium, tylmarin-thorium) which have been employed for the palliative treatment of inoperable malignant disease. Under ether, in the same section, the administration of this anæsthetic with oxygen and alcohol is referred to, as well as its use in saline transfusion. The organic compounds of antimony, arsenic, and bromine also respectively receive ample consideration, and cocaine substitutes are mentioned in connexion with intraspinal anæsthesia. Similarly, a notice of the recent experiences in regard to digitalis, erythrol nitrate, mannitol nitrate, hyoscine, iodine (skin sterilisation), allantoin, discloses intimate touch with fresh therapeutic developments. Acidum cresylicum comes in this section, and under this heading a number of proprietary disinfectants are dealt with in regard to their germicidal value. The authors give an account of their own experimental work upon the subject, and remark that with their practical experience of both tests (the Rideal-Walker and THE LANCET methods) they "prefer THE LANCET method both for its rapidity, apparent concordance and accuracy." This practical testimony is, we need hardly say, a gratifying compliment to the work of our laboratory. A very interesting monograph also appears on the carbolic coefficients of the essential oils.

Volume II. is a separate issue which is intended as a book of reference when more detailed information is required on some special subject either in pharmaceutical assay, clinical analysis, or recent bacteriology as applied to therapeutics. It forms a most valuable addendum to the first volume and amounts to an up-to-date analytical propaganda. In spite of the compactness of the volume, the subjects dealt with are numerous, but for the medical

practitioner the clinical section, presenting the latest methods of examining urine, blood, fæces, and the bacteriological and clinical notes with reference to special diseases (diphtheria, beri-beri, pellagra, actinomycosis, &c.), will possess special interest. The section includes a paragraph on "cancer, credulity and quackery." A valuable source of reference also is the chapter on the approximate composition of patent or proprietary medicines. Room has further been found for chapters on the nature, composition, and uses of mineral waters, on "ptomaines," as well as for an "organic analysis chart," and "a mineral water table."

The information contained in these two volumes is enormous; it is correctly given; chapter and verse are trustworthy; and when the merits of a book can thus be summed it is not too much to say that to medical men and journalists, pharmacists and others, a copy of it is indispensable. For the amount of material collected the authors express their thanks in particular to the current medical and scientific journals. We, as medical journalists, gladly take this opportunity of expressing our thanks to the authors for an admirable work both of compilation and of original research which gives the greatest possible assistance when references are wanted to medical and pharmaceutical advances.

A System of Treatment by Many Writers. Edited by ARTHUR LATHAM, M.A., M.D. Oxon., F.R.C.P. Lond., Physician and Lecturer on Medicine, St. George's Hospital; and T. CRISP ENGLISH, M.B., B.S. Lond., F.R.C.S. Eng., Senior Assistant Surgeon and Lecturer on Practical Surgery, St. George's Hospital. In four volumes. Vols. I. and II.: General Medicine and Surgery. London: J. and A. Churchill. 1912. Vol. I., pp. 1352; Vol. II., pp. 1335. Price 21*s.* net each volume.

Second Notice.

THE list of names of the surgeons who have contributed to the surgical section of this work leads us to expect to find it thoroughly representative also of modern surgery, and an examination of the articles confirms this expectation. It is inevitable that among so many writers there should be some inequality in the manner in which the different subjects have been treated, but for the most part the writers of the surgical articles have borne in mind the object of the treatise—namely, the affording of information likely to be required by those in general practice when they need help in their work. It is clear that elaborate descriptions of the mode in which the greater operations should be carried out would be out of place in such a work; and, on the other hand, the reader may reasonably expect to find an account of the indications for operations and a general idea as to what should be done. Tables of statistics of the results of various operations are out of place in a volume such as this; for instance, a table giving the results of plastic operations for hydronephrosis is, we think, useless. But a careful examination shows that, on the whole, the writers have fully appreciated the wants of the readers for whom the work is intended; here, at all events, will be found the assistance needed in an emergency.

To attempt to criticise in detail a work of this magnitude is practically impossible, and we only attempt to refer to points that have appeared especially worthy of notice. The general instructions for the preparations necessary for the performance of an operation have been carefully formulated by Mr. G. Lenthal Cheatle, and the prevention and treatment of shock and collapse have been well described by Mr. J. P. Lockhart Mummery, although one thing here needs comment. In the account of the administration of an intravenous saline infusion it is stated that the solution should be cooled down to 100° F. unless the fluid has to run through a considerable length of rubber tubing, and then its temperature must be higher. To give an intravenous infusion at a temperature of 100° F. is to lose much of the benefit of the infusion; it will certainly have lost some of its heat before it has entered the body, and to a certain extent an infusion at this temperature will act as a depressant. The solution should never enter the body at a temperature less than about 103° F., and a degree or two higher will do no harm. When the fluid has to pass through a great length of tubing the solution in the container must be at a higher temperature still; it is far better to give the solution at a temperature a little too high than to give it too cold. The formula supplied for the saline infusion is satisfactory, but the form in which it is written would with many persons consume a little time in its interpretation, for it is given as a percentage solution; it would have been as well to give also the quantities necessary to make a pint of the solution.

We are glad to see that Mr. Cecil Rowntree in the account of the treatment of malignant disease has mentioned some of the methods of treatment that have been most prominently put forward from time to time, for if what is said of them here will not induce the reader to make use of them, the information given will at least enable him to reply to the questions of the patient and his friends, who are often anxious to know whether one or other of these methods might not prove of use.

Among the many excellent articles which the volumes contain it is almost invidious to point out any deserving of special mention, but we may refer to a few which have appeared to us to be specially striking. The account of the Surgery of the Rectum by the late Sir Frederick Wallis contains all that is needed by the general practitioner, and yet it does not contain more than it should, for it does not spend valuable space on points which can concern only the operating surgeon. Mr. Ernest W. Hey Groves has written a very useful account of the diseases and surgery of the jaws, and Mr. T. Crisp English's description of the surgery of the breast is very good. The surgery of the pancreas has been described by Professor A. W. Mayo Robson, than whom no better exponent of the surgery of this organ could have been found. The surgery of the thyroid gland has been well described by Mr. T. P. Legg, and we would especially draw attention to the article on deformities by Mr. Robert Jones and Mr. D. McCrae Aitken.

The practitioner will find in these volumes an explicit, interesting, and practical account of the management and treatment of patients, and we can confidently recommend this System of Treatment as a notable addition to English medical literature.

Questions Biologiques Actuelles. Collection de Monographies publiées sous la direction de M. A. DASTRE, Membre de l'Institut, Professeur à la Sorbonne. (1) *Le Goutet l'Odorat.* Par I. LERGUIER DES BANCELS. Pp. 94. Price 3.50 francs. (2) *Les Parathyroïdes.* Par LOUIS MOREL. Pp. 344. Price 10 francs. Paris: A. Hermann et Fils. 1912.

THE "Collection de Monographies," is published under the direction of Professor Dastre, of the Sorbonne in Paris, than whom no better editor could be found. While the *Zentralblatt* is a means by which new information is rapidly disseminated, something more is required—viz., to give a succinct account of the facts of the subject matter, to group them, to criticise and elaborate the results. This is the function of a monograph. The general title of those before us is "Questions Biologiques Actuelles."

The first monograph, on "Taste and Smell," by Larguier des Bancels, is in two parts. About 40 pages are given to Taste and another 40 to Smell. In the part devoted to Taste there is a short general bibliography,

but both here and in the succeeding article we miss any reference to the articles in Schäfer's "Physiology." In the extended bibliography the papers cited are given from 1864 onwards, but oddly enough we failed to find the name of the author himself amongst the list of contributors. There are no figures in the text. The gustatory sensations themselves and their excitants are first described and then the gustatory apparatus, including the nerves of taste, the minute structure of the peripheral organs concerned being omitted. Gustatory sensibility is next considered, then the *modus operandi* of the apparatus, flavours and contrast, gustatory fatigue, the reaction time, and gustatory reflexes.

The latter half of the monograph deals with "smell." The standard work of Zwaardemaker has been largely drawn on, and the indebtedness of the author to the Dutch physiologist is duly acknowledged. Smell is a primitive sense, and therefore has far-reaching relations. In the main the author follows the same lines as in dealing with "taste." The bibliography in these two senses brings out a fact of significance—viz., the paucity of investigators with English names. More might have been made of the work of Cloquet.

The second monograph before us on "The Parathyroids" suggests many thoughts. Anatomy is supposed to teach the art of observation. Even the teacher may be unobservant. What a tribute to accuracy of observation do we find in connexion with the bones and their little modifications, "abnormalities" of muscles, tendons, and so forth. Where were the observant eyes of the human and comparative anatomists who failed to find the "parathyroid bodies"? It is hardly possible to imagine a more conspicuous omission of discovery on the part of anatomists and students than the subject of the present monograph, for these glands, so conspicuous in a fresh thyroid gland, were first discovered in 1880 by Ivar Sandstrœm, of Upsala. More than a decade after their discovery Gley showed their physiological importance, and perhaps even now we have not grasped this importance to the full.

The author gives a translation of Sandstrœm's original paper on the discovery of these glands in the dog, in man, and other mammals; also the contents of Gley's sealed note *deposé* on May 16th, 1891, and read on Dec. 12th, 1891, in the Société de Biologie. Once the path was opened up there was a chase for the spoil. The second chapter deals with anatomy of the parathyroids, their development, distribution, structure in the human adult, the child, and in the fœtus, including their vascularity and secretions, while about 20 pages are given to a description of these glands in animals, from the quadrumana to reptiles. Then follows a description of the effects of their removal by thermal and other means in different types of animals. The story of the extraordinary discrepancies between different observers on the same and on different species of animals is fully set forth in the text. Above all, the variability of these glands—e.g., in the guinea-pig and pigeon—should make an experimentalist very careful in his conclusions. Having given an account of the asserted effects of these glands in different species of animals, the author proceeds to describe the conditions which modify the symptoms or evolution of what the French authors call "absolute parathyroid insufficiency," i.e., of complete parathyroidectomy—e.g., sex, age, food, injuries, temperature, intoxication, and infections, artificial respiration, transfusion of blood, and the effects of drugs. Here the calcium theory of tetany comes in for criticism. Then follows the effects of grafting parathyroids, an interesting chapter which deserves to be read with care. Relative insufficiency is then considered. Leaving morphological changes, the author deals with bio-chemical exchanges and metabolism in chapters well worthy of consideration. We also advise the reader to pay particular attention to Chapter IV. (pp. 231–268), which gives a useful summary of the relations between these glands and other glands with an internal secretion (in this regard see review of Biedl, "Innere Sekretion," THE LANCET, April 1st, 1911, p. 885). Finally, "parathyroid insufficiency in man" is considered. The bibliography extends to over 20 pages. This is altogether a most useful monograph.

Diagnosis und Therapie der Magen-und Darmkrankheiten. Von Priv.-Doz. Dr. WALTER ZWEIG. Zweite, vermehrte Auflage. Mit 36 Textabbildungen und 1 farbiger Tafel. Berlin und Wien: Urban und Schwarzenberg. 1912. Pp. 502. Price, paper cover, 14 marks; bound, 16 marks.

THE author of this treatise, the first edition of which appeared in 1906, has brought it thoroughly up to date. Thus the sections relative to the visceral nervous system, enteroptosis, ulcerative colitis, sigmoiditis, sphincteric proctitis, are now incorporated. The subject of diagnosis is more freely entered upon, as are also the chemical and microscopic research methods concerning the contents of the stomach and fæces.

The work opens with a consideration of the physiology of the digestive processes in the mouth, stomach, and intestines; and here the reader will find a full exposition of the part the visceral nervous system plays, illustrated by an excellent plate. The researches of Langley, H. Meyer, and Gaskell receive due acknowledgment. Following this is a chapter on nutrition and metabolism, where Chittenden's views are mentioned with approval. Next the matters relative to the various constituents of the food, such as water, albumin, gelatin, fat, are noted, and are succeeded by the section on the different articles of diet, animal and vegetable; and then the author naturally proceeds to the chapter on general dietetics. He gives a valuable table showing the relative amount of calories possessed by the various articles of food. The author in the succeeding section turns to the consideration of dietetics with reference to diseases of the stomach and intestines, showing what articles of food are to be recommended and in what quantity; he then criticises the various cures that have been from time to time put forward, such as the milk cure, Weir Mitchell's method of treatment—which receives a very full criticism, the diet poor in chlorides, and finally the vegetarian diet. The different physical methods of treatment in these diseases are next passed in review, such as hydrotherapy, treatment by baths, massage (which is illustrated by some excellent plates), electricity, washing out of the stomach, and clysters; and then follows a section on medical treatment, in which the different drugs are duly considered. The last chapter of this part of the work considered in its general aspect is devoted to rectal feeding.

The special part opens with the diseases of the stomach, acute and chronic gastritis being the first subjects reviewed. In the treatment of the latter the author warns his readers against the use of purgatives, inasmuch as these nearly always increase the catarrh of the viscus. Ulcer of the stomach receives attention, the author insisting on the effect of a poor supply of blood to the part being the chief factor in its etiology. With regard to its treatment, this is considered first with reference to the stopping of the hæmorrhage; here the physician is advised to forbid any nutriment by the mouth, the organ must be kept at complete rest and absolutely empty. This will generally arrest the hæmorrhage. Should it not do so within 24 hours a preparation of ergot, gelatin, or adrenalin should be injected. With regard to the treatment of the chronic ulcer, the author succinctly gives full particulars as to how this is

to be carried out week by week from the first to the fifth; he then relates his experience of the different drugs that have been recommended, and the chapter finally closes with a discussion on the value of operation. Ectasia of the stomach, cancer of the stomach, enteroptosis, and nervous dyspepsia are considered, this last disease receiving fuller attention than any other.

The remaining portion of the treatise deals with the diseases of the intestine. The various sections relative to this affection are as fully set forth as those relative to the stomach. The reader will find excellent accounts of acute and chronic enteritis, chronic ulcerative colitis, sigmoiditis, chronic constipation, ulcer and cancer, appendicitis, ileus, disease of the rectum, and, finally, nervous complaints. The work closes with the proceedings to be followed out during the chemical and microscopical examination of the contents of the stomach and fæces.

This edition of the work of Dr. Walter Zweig is a very valuable summary of all the facts at present known concerning the diseases of which it treats.

Taschenbuch der klinischen Hämatologie. Von Dr. VON DOMARUS, Assistent an der II. Medizinischen Klinik in München. Mit einem Beitrag: Röntgenbehandlung bei Erkrankungen des Blutes und der blutbereitenden Organe von Professor H. RIEDER, und einer farbingen Doppeltafel. Leipsic: Georg Thieme. 1912. Pp. 201. Price 4 marks.

THIS very useful little book is based upon the author's course on Clinical Hæmatology in the Medical Clinic at Munich. It is intended for the use of practitioners and students, and is of the nature of a post-graduate course. Only the most important matters and the simplest methods are dealt with, but the book will be found to contain the information which the general practitioner chiefly needs. It is divided into two parts, of which the first deals with the technique of blood examination and the second with the clinical aspects of hæmatology. The technical part describes quite clearly and simply the methods usually employed, and gives practical hints as to the way in which the difficulties that may be met with can be surmounted or avoided. The book shows a proper appreciation of the relative importance of the various determinations. The methods for hæmoglobin determination do not include Haldane's, and the time of coagulation is determined by Sahli's simple plan. The staining method recommended for general use is that known as the May-Grünwald, which does not differ apparently from that of Jenner. Other stains, including the triacid stain of Ehrlich, are also given, together with the appropriate methods of fixation. A useful, simple, and well-arranged coloured plate of typical normal and abnormal cells stained by the May-Grünwald method is inserted, and attention is called to Dr. Arneth's method of differentiating leucocytes by the varying complexity of their nuclei. A short account of the origin and relation of the various leucocytes is given without excessive dogmatism. In the clinical part the various anæmias are described, together with their respective blood pictures. Nothing in this calls for special mention except that the clearness of expression noticeable in the first part is characteristic also of this portion and is assisted by the system of marginal references adopted. Treatment is considered, and in some cases prescriptions are given. Professor H. Rieder contributes a section on the action of the Roentgen rays on these affections, with information as to their practical application, the contra-indications to their employment, and the probable results.

A most useful chapter for the general practitioner with some knowledge of blood examination is that in which the blood changes in infectious disease are treated, The changes in malaria and kala-azar are included in this section. The information is also embodied in a tabular form, which is highly convenient for rapid reference. The hæmorrhagic diathesis, hæmophilia, paroxysmal hæmoglobinuria, and the effects of blood poisons and of malignant neoplasms are briefly dealt with.

This is a book which can be recommended to the practitioner.

A Manual of the Practice of Medicine. Prepared especially for students by A. A. STEVENS, A.M., M.D., Professor of Therapeutics and Clinical Medicine in the Women's Medical College of Pennsylvania; Lecturer on Medicine in the University of Pennsylvania, &c. Ninth edition, revised. Illustrated. London and Philadelphia: W. B. Saunders Company. 1911. Pp. 573. Price 12*s.* 6*d.* net.

THE object of this book, as conceived by the author, is that it should serve as an outline of the practice of medicine, which may be enlarged upon by diligent attendance upon lectures and critical observation at the bedside. It gives in very small compass and in convenient form a short presentation of the general characters of medical diseases, including affections of the skin and some of the less common tropical diseases. The information it contains is generally accurate, and systematically arranged. It might well serve as an introduction to work in the wards and out-patient department for junior students. The fact that it has reached its ninth edition bears testimony to its useful character. Each important disease is considered under the subdivisions of definition, etiology, pathology, symptoms, complications, diagnosis, prognosis, and treatment. The descriptions given are necessarily brief and the statements made are for the most part dogmatic, theories and doubtful points being wisely omitted. Questions of diagnosis and treatment are considered more fully than the other sections, and the advice given in regard to treatment is generally practical. Prescriptions are often given in full.

The sections describing the pathology of the various diseases are the shortest and least instructive. They are usually so brief as to convey very little information, except in regard to morbid anatomy and histology. The literary style of the book is better than that of many small books upon medicine, and it is very well printed and produced, so that it is easy to read. It is in no sense a cram book for examinations, as the information it contains would not be sufficient upon many matters. The present edition has been revised, and the sections upon dysentery, acute pancreatitis, worm infection, rheumatic fever, dengue, rheumatoid arthritis, the purpuras, aphasia, myelitis, and acute anterior poliomyelitis have been rewritten and some recent observations have been incorporated. New articles deal with conditions like sprue, beriberi, Mediterranean fever, plague, and pellagra. Dr. Stevens has been successful in his endeavour to produce a book dealing with the broad outlines of medicine in an elementary manner.

Traité Pratique des Maladies du Cœur et de l'Aorte. Par ERNEST BARIÉ. Third edition. Paris: Vigot Frères. 1912. Pp. 1125. Price 20 francs.

SINCE the second edition of this excellent manual was published a large amount of valuable investigation has been completed in regard to the physiology of the heart and in relation to the morbid affections of that organ. Dr. Barié has summarised in a satisfactory manner the work that has been accomplished, so that this volume represents a practically new book, thoroughly up to date, and embracing the most modern ideas on "cardiology."

The additions mainly concern the functional diseases of the heart, especially those which alter the physiological rhythm; thus, the conditions of tachycardia, bradycardia, and extrasystole are described at length. This necessitates a full description of the graphic methods of examining the

heart. These methods, formerly introduced by Marey and Potain, have now reached a most elaborate phase. Interesting results have been obtained by the means of the electrocardiograph, although owing to the expensive character of the instrument but few observers have been able to acquire a large experience in its use. A short account is given of the "cardio-œsophageal pulsation"—that is to say, the pulsation of the left auricle as transmitted to the œsophagus, and registered by means of a special instrument; the technique is described and a *résumé* given of the results so far obtained.

Several chapters are devoted to a study of the modifications that occur in the structure and action of the heart in certain pathological states, such as chlorosis, obesity, the senile state, pregnancy, kidney disease, syphilis, gout, and diabetes. The portions of the work dealing with the therapeutics of diseases of the heart are well worthy of study. The various drugs which may be employed are fully discussed, but stress is also laid on the importance to be attached to directions as to the general mode of life which patients should follow; the amount and kind of exercise which should be taken; and other matters which, if carefully attended to, will add greatly to the value of the routine methods usually adopted.

Dr. Barié may be congratulated on this edition, which contains the most recent views on all points concerned with diseases of the heart and of the aorta.

Anomale Kinder. Von Dr. med. L. SCHOLZ, Direktor de Provincial-Irren- und Idioten-anstalt in Kosten (Prov Posen). Berlin: S. Karger. 1912. Pp. 442. Price 8.60 marks.

Dr. Scholz devotes a volume of 450 pages to a consideration of the vagaries of the abnormal child, who is placed in a borderland between health and disease, and who is to be found in his hundreds in prisons, reformatories, special institutions, infirmaries, and homes. The problem of what to do with the child whose general naughtiness and waywardness renders parental discipline futile is one to which more attention is being directed than has hitherto been the case. If he is not to swell the ranks of youthful offenders he must be recognised from the outset as an individual whose responsibility is incomplete, not ignored or dismissed from the mind without further thought, inasmuch as he cannot be considered insane. The problem of the feeble-minded is becoming increasingly urgent in view of the widening of their ranks. Young psychopaths of all sorts, children of instinct, eccentric, untruthful, spiteful, impulsive, morally imbecile, homicidal, and suicidal, they force themselves on the notice of parent or guardian, teacher or physician, and the handling of them is matter for serious discussion. Dr. Scholz devotes a large section of his book to the question of family *versus* institutional treatment, and educational *versus* medical treatment, and to the problem of military and legal interference. He describes in great detail the various types which have come under his care, and indulges in various short excursuses on such topics as the influence of puberty on the abnormal child, the physical stigmata of feeble-mindedness, sexually abnormal children, and so on. He supplies a list of somatic stigmata of degeneration which is fortunately not so all-inclusive as others enumerated by enthusiasts whose zeal has outrun their discretion. Dr. Scholz remarks justly that the significance of the anomalies of the external ear is the "Haupttummelplatz der Degenerationslehre."

In spite of a certain diffuseness of st le, and a scarcely concealed tendency to deal with medical matters in a semi-popular way, the book is worthy of note because of the writer's evident sympathetic insight into the abnormal child's mind, and, while there is nothing novel in its subject-matter, it contains a great deal of information handled in a methodical and readable fashion.

LIBRARY TABLE.

Hospital Sisters and Their Duties. By EVA C. LÜCKES. London: The Scientific Press, Limited. Pp. 234. Price 2*s.* 6*d.* net.—Miss Lückes, who is the matron of the London Hospital, is already well known to our readers as the author of an excellent book on nursing, and the work now before us, which has reached its fourth edition, deals with one portion, and that by no means the least important, of the art of nursing—namely, the duties of hospital sisters. To what a degree the power for good of a hospital ward and the smooth or the reverse working of a hospital depend upon the sisters only those conversant with the inside of a hospital really know. But this much is certain—that the capability or otherwise of the sisters affects for good or evil the working of, and the benefits bestowed by, the hospital. No one can learn nursing or the principles of ward organisation from a book alone, but those who study Miss Lückes's counsels will assuredly derive great profit from them if they are combined with practical work. The whole of the book is good, but if we were to single out any one chapter as being better than another it would be the one dealing with the training of probationers, for in every class of training it is at the beginning that the learner is most easily either assisted in his career or hopelessly spoiled. A newcomer into hospital work is always very new, the duties are so strange, the work so responsible, and at first so distasteful, that much sympathy and tact are required in the teachers, and Miss Lückes evidently realises this to the full.

Diseases of Women: A Handbook for Nurses. By FLORENCE E. WILLEY, M.D., M.S., B.Sc. Lond., Assistant Physician for Diseases of Women and Obstetric Tutor, Royal Free Hospital; Examiner to the Central Midwives Board. London: The Scientific Press, Limited. 1912. Pp. 92. Price 2*s.* net.—This little book consists of a series of papers written originally for the *Nursing Mirror*. Its object is to attempt to make clear to the nurse who undertakes the care of patients suffering from diseases peculiar to women the relation between her duties, the remedies she applies, and the disease which the physician is aiming to cure. The author's aim, therefore, in discussing the various duties a nurse has to undertake, has been to show a good reason why she is asked to carry out certain methods and to make clear to her how all-important is her loyal effort to attain the end in view. The little book is well written, and the instructions are clearly given and are not too detailed. We notice one practical point of importance, in our opinion. The nurse is told to prepare the solution used for giving a vaginal or intra-uterine douche in the douche can, but the important point that the water is to be introduced first and the antiseptic afterwards is not mentioned. If this is not done it is not impossible to have a pure solution of carbolic acid or lysol, or whatever antiseptic is being used, collecting in the rubber tube, especially when the tap is not near the can but at the distal end of the tubing. The correct method of preparing a solution for use as a douche is not in the douche can at all, but in another clean sterilised vessel. In the chapter dealing with new growths of the uterus there is a tendency rather to exaggerate the possible dangers of fibroid tumours of the uterus complicating pregnancy, especially when we remember that this book is intended for nurses and that in the great majority of cases of fibroid tumours complicating pregnancy there are no dangers at all. On the whole, however, this little book will adequately fulfil the purpose for which it is intended.

MISCELLANEOUS VOLUMES.

WE have a batch of works of fiction and verse, submitted to us, we suppose, because good fiction may in some sense be regarded as partly belonging to the medical man's armamentarium, especially with a view to relieving the tediousness of convalescence. Some of them also have a more or less medical *motif*. The introduction of "local colour" into a novel requires very skilful handling. When the author is acquainted apparently only at second-hand with the subject he is almost sure to make a tedious parade of his acquaintance with it, and almost always he betrays in some minor detail, however carefully he may have been coached, his lack of practical knowledge. Such is the case in *The Hidden Fear*, a novel by JAMES BLYTH (London: F. V. White and Co., Limited. 1912. Pp. 311. Price 6*s*.). The book deals with the subject of insanity, and is intended to enforce the point that acquired characteristics are not hereditary. The hidden fear is the dread entertained by the elder daughter of a clergyman that the "seeds of insanity" may be present in herself and her younger sister, in consequence of which she renounces marriage for herself and endeavours to enforce a like renunciation in the case of her younger sister. Their father, the clergyman, years before, when they were children, became insane in consequence of an injury to his head, and murdered his wife. The book contains disquisitions on insanity, asylums, bacteriology, medical research, and medical science generally, but the author is not well informed. The medical details are more or less of a caricature. For the rest the story is passable enough.——*The Dominant Chord*, by Mrs. AMBROSE HARDING (London: T. Werner Laurie. Pp. 316. Price 6*s*.), is a story of human passion, a portrayal of English life on the beautiful Island of Dominica. It deals with the problems of miscegenation, showing in one of the *dramatis personæ* the primitive savage uppermost—the dominant chord—while in another, removed in the fourth generation from the negro strain, civilisation and convention have invested the character with the control of reason and right living. The story is interesting and the characterisation good. We may remark, however, that it is by no means a usual thing—even if it ever occurs—for the thermometer to go down to zero (p. 17) on English nights.——Readers of novels who love the atmosphere of Mayfair and Bath, sweet with the scent of lavender, who delight in brocade, powder and patch, and episodes of the road and ancient hostelries; who remember Kitty Bellairs (now Lady Kilcroney), Beau Stafford, and hairbrained Dennis O'Hara (now Viscount Kilcroney), in the "Bath Comedy," will rejoice to meet their old friends again in *Love Gilds the Scene and Women Guide the Plot* (London: Smith, Elder, and Co. 1912. Pp. 339. Price 6*s*.), by AGNES and EGERTON CASTLE.——A pretty little story by one who seems to know her Japan from intimate experience and thoughtful study, rather than with the snapshot observation of the mere globe-trotter, is *The Kingdom of Slender Swords* (London: Everett and Co., Limited. Pp. 288. Price 7*d*. net), by HALLIE ERMINIE RIVES. Her descriptions and expression, however, are imaginative at times to the point of over-straining. They make one feel that she is juggling with words as the Japanese juggler deftly spins his marvels before the beholder's eyes, that strain themselves to catch the meaning of some astounding trick, the simplicity of which would become obvious to even the least acute observer by one or two quiet turns. The theme is the idea of duty and sacrifice dominant in Japanese life, as exemplified in the sacrifices of the girl Haru.——We have often had grave doubts about the wisdom of the maxim, "Second thoughts are best." In his preface to *Spring Days* (London: T. Werner Laurie. Pp. 320. Price 6*s*.) George Moore tells us that for years this book had been omitted from the list of his acknowledged works and that he had lost faith in it. He himself was at one time convinced, so he says, that it was the worst book he ever wrote. He then proceeds to relate the insistence of Fate which goaded him into re-reading this novel which he had kept so resolutely out of his mind for 25 years, and he read it with zest, and has republished it. "Spring Days," he says, is as free from sentiment or morals as "Daphnis and Chloe." But the Greek romance has more points of interest.——*The British Astronomical Weather Almanac for 1913* (edited by the daughter of the late B. G. JENKINS, F.R.A.S. Pp. 30. Price 2½*d*. post free), and *The British Weather Chart, 1913* (price 6*d*. large size, 1*d*. small size. London: R. Morgan, Norwood), are based on publications by the late Mr. Jenkins, in which "he gave sufficient evidence to show conclusively that the moon has a great deal to do with the production of the weather"; "the sun's influence is practically constant from year to year; the sought for perturbation is then to be found in the combined influence of the sun, moon, and planets." The chart shows curves of probable mean temperature and barometric pressure for the British Isles, which curves, we presume, are meant to apply to Cornwall and Caithness, to Kerry and Kent, in about equal proportions, or to be a mean between them all. On comparing the daily thermometer readings at this office with the prognostications of the chart we find that from Jan. 27th to Feb. 5th our maximum reading did not reach 40° F. on any day except Feb. 1st, the minimum ranging between 21° and 34°. The chart certainly shows a cold snap on Jan. 30th and 31st, with a mean temperature of 25°, but from Feb. 2nd to 4th the *mean* temperature is forecasted as 46°. This *might* have been the mean for the British Isles. We registered no rainfall from Jan. 27th to Feb. 4th; the chart predicted rainfall, chiefly at the close of January and beginning of February. How far the chart is likely to be of practical use to landed proprietors, farmers, fishermen—and shall we say golfers?—we feel unable to determine.——But as golf becomes more and more an exact science for those who play it, and an enormous business affair for those who run clubs, sell paraphernalia, let houses, and so on, the question whether the atmospheric element will make for the game grows increasingly serious. JOSHUA TAYLOR, the Acton professional, has written a short book on Golf (*The Art of Golf*. Werner Laurie. Pp. 161. Price 2*s*. 6*d*. net.), workmanlike in style and matter and intended for those players who are more or less beginners and find a difficulty in following the advanced theories of larger treatises. The use of each club illustrated by photographs is discussed in a separate chapter, and practical instructions for combating the golfer's besetting sins are given in straightforward language from the experience of a professional teacher. The writer's brother, the great J. H., four times open champion, has contributed a chapter on the Evolution of the Bunker. The book is as serious in its intent to instruct as any surgical vade-mecum for students, with its prefatory chapter by a first-class professor, could possibly be.——There is little need at the present time to insist on a knowledge of swimming in the rising generation; fortunately it is becoming more and more popular as an exercise and as an amusement, and in our elementary schools is getting to be almost as general an accomplishment as in those of a higher grade; and for girls possibly even more generally practised Mr. F. E. DALTON, in his *Swimming Scientifically Taught* (London and New York: Funk and Wagnalls Co. 1912. Pp. 195. Price 5*s*. net), has issued a manual, with directions that are very clearly expressed, and lavishly illustrated so

as to make the instructions still more intelligible. It would be well in the next edition to give a description of the Schäfer method for restoration of the apparently drowned, in addition to that of Sylvester.

JOURNALS.

Journal of Anatomy and Physiology. Conducted by Sir WILLIAM TURNER, K.C.B., Professor ALEX. MACALISTER, Professor ARTHUR THOMSON, Professor ARTHUR KEITH, and Professor ARTHUR ROBINSON. Vol. XLVI. Third Series, Vol. VII., Part IV. July, 1912. London: Charles Griffin and Co., Limited. Published quarterly at 6*s.*; annual subscription 21*s.*, post free.—We are glad to welcome in the present issue of the *Journal of Anatomy and Physiology* a paper which deals with a patient research in microscopic anatomy, for such articles have become increasingly rare in the *Journal* of late years. Our professed anatomists in England have for too long neglected histology as a subject for research, and it seems useless to plead for the teaching of histology to be restored to the hands of the anatomists when they are themselves directing so little attention to it. Even the present article is not from the pen of one of our teaching anatomists, although the subject—the Innervation of the Sino-auricular Node and the Auriculo-ventricular Bundle—is one in the study of which anatomists have taken a leading part. In order to study the minute nerves of these structures Dr. Alexander Morison has adopted a modification of Sihler's method of staining, a prolonged process carried out at a temperature of 37° C. The results obtained by this process are very beautiful and are illustrated by a series of excellent micro-photographs. The material used for this research was obtained from the sheep and from the pig, and a note (which it is to be hoped will be expanded into a future paper) is added on a more recent examination of human material. Dr. Morison has incorporated in this paper some extremely sound and highly necessary remarks upon the dangers of arguing the absence of nerves in structures in which their presence cannot be demonstrated by crude histological methods. Dr. W. L. H. Duckworth contributes an extended description of the Sudbury Calvaria, a human fragment from Derbyshire, first described in 1864. This calvaria has gained importance since, under the mistaken title of the Ledbury skull, it has been redescribed by Huxley and Lang, Greenwell and Rolleston, and by Boyd Dawkins. Dr. Duckworth gives a full description of the fragments and illustrates the description by numerous photographs and projection drawings. The conclusions derived from this study are that the skull belongs rather to Huxley's "river-bed" type than to the Neanderthal race, to which its resemblance, noticed by Huxley, is probably merely superficial and spurious. An interesting paper on the Origin of the Vertebrate Limb is by Professor A. C. Geddes, who rejects the lateral fin or bilge-keel hypothesis of Balfour, Mivart, and other embryologists. The constancy of two pairs, and never more than two pairs, of limbs appears to stand in the way of the acceptance of this theory in its crude form. In brief, Professor Geddes supposes that limbs are developed in the whole vertebrate stock at the site of four cell accumulations which may roughly be said to mark the four corners of the yolk sac. As for the correspondence between the fore and hind limbs of the same side, the author considers this to be a simple looking-glass symmetry which may become secondarily distorted. The paper deals with speculative matter, and in addition to a clear exposition of the evidence brought forward it is assisted by a number of excellent illustrations. Professor F. G. Parsons contributes a paper describing the method he has adopted for constructing contour diagrams of the mandible. This reconstruction of a graphic representation of skulls, or parts of skulls, is without doubt a most desirable thing in anthropology, since an accurate outline drawing, which from given numerical data anyone may reconstruct, conveys more of the actual type of skull than do the figures themselves. It may be said that we are only groping as yet towards an appreciation of graphic methods in anthropology; there is still to be a standardisation of method and agreement as to measuring points. This will come, and such work as that of Professor Parsons will help greatly to bring about this highly desirable end, for it matters not if these methods be accepted as final, or as merely tentative—they show, and show well, the practicability of graphic reconstruction. A further paper on the Embryology of the Ferret from the Birmingham School is contributed by Dr. J. Percy Good. This contribution deals with the reconstruction of a ferret embryo of 8 m.m. which showed an abnormal flexure in the neck region associated with a cervical spina bifida. Mr. Douglas G. Reid continues his Studies of the Intestine and Peritoneum in the Human Fœtus. A further communication on the Formation of the Nasal Cavities is made by Mr. J. Ernest Frazer, and his paper constitutes an important continuation of the contributions on the same subject already made by the author in the *Journal*. One important conclusion appears to be necessarily drawn from this paper, for Mr. Fraser seems to make it clear that instead of the two nasal chambers being formed by a septal downgrowth they are sculptured out by the upgrowth of the cavities themselves. As an isolated fact this is of great interest; but it may also be put into line with other embryological processes in which cavity growth rather than septal division of cavities has been shown to result in the subdivision of an originally single chamber. This issue also contains the index to Vol. XLVI.

Quarterly Journal of Experimental Physiology. Edited by E. A. SCHÄFER, F. GOTCH, W. D. HALLIBURTON, C. S. SHERRINGTON, E. H. STARLING, and A. D. WALLER. Vol. V., No. 2. London: Charles Griffin and Co., Limited. 1912. Pp. 91–201. Price 6*s.*—Speaking generally, the papers included in this number are of a highly technical character, and though interesting to physiologists do not admit of being easily condensed for report. Florence Buchanan continues her researches on the Relation of the Electrical to the Mechanical Reflex Response in the Frog. Amongst other results she finds that "decerebrate strychnine frogs" show that a reflex contraction outlasts its electrical counterpart by one- to two-tenths of a second at least. A reflex contraction depends for its strength on the duration of the central stimulus immediately producing it, rather than on its strength, in so far as the electrical response of a muscle is a measure of the strength and duration of its immediate stimulus. H. E. Roaf continues his work on the Relation of Proteins to Crystalloids. His contributions deal with Hæmolysis by Hypotonic Sodium Chloride Solutions and Hæmolysis by Rise of Temperature. Alexander Fraser gives an elaborate paper on Reflex Inhibition of Skeletal Muscle. In order to follow clearly this paper the reader must bring with him a thorough knowledge of the work, especially of Sherrington, in all that relates to spinal reflexes. Russell Burton-Opitz continues his studies on the Vascularity of the Liver under two headings: the Influence of the Greater Splanchnic Nerves upon the Venous Inflow and the Effects of Afferent Impulses from the Hepatic Plexus upon Arterial Inflow. The liver ranks first among the organs of the body as regards its blood-supply. A liver weighing 500 grammes—e.g., from a dog weighing 15 kg.—receives 420 c.c. of blood in a minute, and it appears

that the entire mass of the blood traverses the liver once in every three minutes, though there are periods of activity alternating with periods of depression. The author concludes that the venous flow into the liver is determined, primarily and largely, by the size of the blood-bed in the different organs which drain their blood into this channel. Excitation of the intact hepatic plexus induces a transitory inhibition of respiration and a rise of arterial blood pressure. The inflow of blood was measured by placing a "stromuhr" in the hepatic artery. In a liver which is "denerved" the parallelism between the flow and the general blood pressure proves that the arterial supply of such a liver is directly proportional to the systemic presssure.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

LACTAGOL.

(E. T. PEARSON AND CO., LIMITED, 49, WATLING-STREET, LONDON, E.C.)

Lactagol is an interesting substance prepared from cotton seed. It occurs as a pale brown granular powder which is not soluble in water but swells up on boiling. Recent experiments have shown that it promotes the secretion of milk and the quality is at the same time improved. According to our analysis it appears to consist practically entirely of protein substance, the total nitrogen amounting to 15·68 per cent. The mineral matter amounted to 1·51 per cent. and the moisture to 7·08 per cent. The administration of the extract to patients supplying both a deficient amount and quality of milk led to a decided improvement in both directions. The secretion increased in quantity and proved to contain richer proportions of fat and albumin. These results are interesting, and suggest further trials being made. Our attention was drawn to the preparation at the recent exhibition of the British Medical Association at Liverpool.

(1) STREPTOCOCCUS VACCINE, DENTAL; (2) VAPOROLE CHLOROFORM AND ETHYL IODIDE COMPOUND; (3) VAPOROLE PITUITARY (INFUNDIBULAR) EXTRACT; (4) TABLOID AND VAPOROLE EMETINE HYDROCHLORIDE.

(MESSRS. BURROUGHS, WELLCOME AND CO., SNOW HILL BUILDINGS, LONDON, E.C.)

1. The streptococcus vaccine (dental) contains several strains of streptococci obtained from cases of pyorrhœa alveolaris and septic conditions of teeth and gums. In most cases of pyorrhœa the predominant organisms found are streptococci. The vaccine is produced under careful bacteriological supervision and is issued in two dilutions containing respectively 10,000,000 and 50,000,000 organisms. The preparation is one that may be used with confidence in the treatment of pyorrhœa by means of bacterial vaccines. 2. The vaporole chloroform iodide compound is obviously convenient when the administration by inhalation of the drugs indicated is desired. The combination of chloroform, ethyl iodide, and menthol is a satisfactory one. The capsule is surrounded with absorbent material enclosed in a silken sac, so that for administration it is only necessary to crush the capsule and inhale the contents. The method has been employed with advantage in all forms of laryngeal spasm. 3. The vaporole pituitary extract is again convenient for intravenous or intramuscular injection in cases where it is required to raise blood pressure and to maintain that pressure. As is well known, pituitary extract sustains the tone of plain muscle, particularly the uterus, slows and strengthens the heart-beat, and causes diuresis. The vaporole pituitary extract, which is sterilised, is now available in quantities of 0·5 c.c. 4. Two recent preparations of emetine hydrochloride have recently been issued, a tabloid containing 1/3rd grain of the hydrochloride for injection solution, and a vaporole presenting the same dose, but in the form of 1 c.c. of a sterilised solution; these preparations are convenient for the administration of the principal alkaloid of ipecacuanha in cases of amœbic dysentery and hepatitis.

NUTRESCO PRODUCTS.

(THE NUTRESCO COMPANY, MARITZBURG, NATAL, SOUTH AFRICA. AGENTS: MESSRS. FOWLIE AND BODEN, 14 AND 15, COLEMAN-STREET, LONDON, E.C.)

The basis of these preparations is nutresco, a pale brown powder with a not unpleasant odour which is obtained by a special method of digesting fresh meat. According to our analysis nutresco contains 28 per cent. of soluble matters, which consist chiefly of true proteoses (albumoses and peptones). The insoluble matter contains unaltered albumin; the total nitrogen amounted to 13·40 per cent., which indicates a protein value of 83·75 per cent.; the mineral matter amounted to 4·60 per cent., of which 2·8 per cent. was soluble in water; the phosphoric acid amounted to one-third of the total salts. Nutresco powder is therefore accurately described as a partially soluble substance derived directly from meat by an approved hydrolysing process. It therefore has a special food value which can be applied in many directions. We have examined, for example, samples of maltesco, which we found was an active malt extract containing the soluble proteins of nutresco; bovesco, containing both the extractives and soluble nutrients derived from meat; and peaflour containing a suitable addition of soluble protein. Nutresco also makes a nourishing biscuit which has been used with advantage as an emergency ration for military purposes. We have further examined two samples of wine which contained permanently in solution true proteoses. "Vinesco," for example, gave in our analysis 1·72 per cent. of protein, while the "invalid sample" contained as much as 3·96 per cent. of true proteose. Both wines gave abundant precipitates with bromine water and with tannic acid solution. The claim as to their nutritive value is thus supported. They are stated to be intended exclusively for therapeutic use under the guidance of a medical adviser. They contain 5 per cent. by weight less alcohol than ordinary port. They are somewhat sweet to the taste, containing 11 per cent. of sugar. The whole series of preparations is prepared in our South African colony.

THE ELECTRIC RESPIRONE.

(THE ELECTRIC RESPIRONE COMPANY, 507, PENN BUILDINGS, CLEVELAND, U.S.A.)

This apparatus is convenient for the vaporisation of well-known medicaments in the treatment of respiratory troubles by inhalation. Although the word "electric" is connected with the name of the apparatus, electricity has no direct connexion with the treatment. The current is merely employed to heat a capsule containing the medicament. This is done by means of a resistance coil, which can be connected with primary cells or to the continuous main, using a lamp of definite resistance. The capsule containing the medicament is situated in a glass container attached to the back of a mouthpiece, which is fitted with a valve that permits of the vapour being drawn into the mouth, while it stops it from returning. Several medicaments are supplied with the apparatus, the applicability of which in various combinations is well known. The apparatus works well, is ingeniously devised, and convenient to use.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 7, 1912.

The Nature of Life.

IN his presidential address before the British Association for the Advancement of Science, which we publish in full in another column, Professor SCHÄFER was fortunate in having as his theme a subject which, though it is doubtless the oldest of all the great problems of speculation, nevertheless not only retains its universal and unceasing interest, but can even still admit, for all its hoary antiquity, of being illuminated by new facts and reasoned on by fresh arguments. The question, What is Life? has been many times asked and answered, from their various points of view, by the poet, the moralist, and the philosopher, but the answers, as their multitude and diversity show, give proof of little more than their own inadequacy. Will the reply of science be more satisfying, and will the method of induction from verified facts furnish the solution which the promptings of intuition have hitherto failed to give? True science is ever cautious, and Professor SCHÄFER is far too prudent to have any disposition to rash prophecy, but it is easy to see from the confident spirit which breathes throughout his address that he feels assured of the power of science to answer our questioning and ere long to unveil some part, at all events, of the mystery of life. It is significant of the rapid advance achieved within the last few years in this field of research that a physiologist of Professor SCHÄFER'S distinguished attainments should be prepared to lend the weight of his great authority to this optimistic view of the future of his science.

It is hardly necessary to say that the direction in which Professor SCHÄFER looks for the discovery of the nature and origin of life is in the chemistry and physics of the nitrogenous colloids. It is, in fact, the researches regarding the properties of matter in the colloidal state which have furnished the majority of the recent and most conclusive arguments against the hypothesis of a distinct and specific "vital force"; and the succinct and lucid account which Professor SCHÄFER gives of the results of observation and experiment in this field is one of the most interesting portions of his brilliant address, and imparts to it something of the character of a funeral oration of vitalism. Thus it has been proved that the processes of assimilation and disassimilation, supposed not so long ago to be characteristic of living material, are in a large measure explained simply by the physical and chemical properties of a colloidal solution enclosed in an osmotic membrane, and this is in essentials the constitution of living protoplasm. Again, it has been shown by the experiments of LEDUC that the growth and division of artificial inorganic colloids, when placed in an appropriate medium, present singular resemblances to the phenomena of the growth and division of living organisms. Even the complex process of karyokinesis has been successfully imitated with solutions of common salt containing a suspension of carbon particles. And, if what used to be regarded as the characteristic manifestations of life can thus be shown to be brought about by the operation of ordinary chemical and physical forces, it is equally vain, we are told, to seek evidence of a "vital principle" in the specially complex chemical composition of living substance. On the contrary, so far is living matter from possessing in all cases the infinite complexity formerly attributed to it, that the recent researches of biological chemists, and notably of KOSSEL and FISCHER, have shown the constitution of the nucleus and of the cell proteins to be such that we may anticipate their being produced synthetically within the measurable future. The combination of a relatively small number of elements into a colloidal compound represents, then, the chemical basis of life, and, Professor SCHÄFER tells us, "when the chemist succeeds in building up this compound it will, without doubt, be found to exhibit the phenomena which we are in the habit of associating with the term 'life.'" We have, indeed, gone far since WOHLER in 1828, by the experimental synthesis of urea, made the first breach in the barrier between the organic and the inorganic.

If these startling anticipations can be realised, we may hope one day to bring to fruition the dream of the alchemists, to discover and to apply the secret of generation, though the way, indeed, will be hardly that of the visionaries of the Middle Ages, and though the results will seem but meagre beside their glowing expectations. For the laboratories of the future will not give us the homunculus, for whose creation PARACELSUS laid down his precise prescriptions, nor will it manufacture monstrous beings after the sort fashioned by FRANKENSTEIN. Even the synthetic beefsteak will be far beyond our powers. The most that we may look for is no more than to create the dim beginnings of vital activity, to mould the faint transitional forms between living and non-living matter. And with this result, poor though it may appear to the popular imagination, we might well be content, for could we but construct this colloidal slime we should hold the primal material from which Nature, through the slow process of evolution, has built up all the infinite variety of organic life culminating in that most complex of cell-aggregates which consorts with its kind in the congenial atmosphere of associations for the advancement of science. When physiology can contemplate such an achievement as almost within its grasp, it is natural to ask if it can also foresee the possibility of realising that other dream of the alchemists, the discovery of the secret of perpetual youth. Professor SCHÄFER briefly refers to this question at the close of his address, but only to repeat in the name of science the age-old counsel of resignation. Whatever may be the case with the simplest forms of organisation, it is certain that the complex multicellular organism must not hope for immortality; the fixed cells of the body, at any rate, must eventually grow old and ultimately cease to function; and

when this happens to cells which are essential to the life of the organism general death must result—

> Certa quidem finis vitae mortalibus adstat
> Nec devitari letum pote quin obeamus.

But even in face of this inexorable law science has still a consoling message; it can hold out the hope that one day the ravages of disease may be so far eliminated that death will be nothing more than a quiet, painless phenomenon; it will cease to be feared, and may come even to be desired as the fitting close of a weary day.

The Plague Epidemic in India: A Review.

IT was in August, 1896, 16 years ago, that plague appeared in Bombay, and spread gradually from that centre over the greater part of India, causing, up to the present time, upwards of 8,000,000 deaths according to the official reports. How many more persons died from unrecognised or concealed plague will never be definitely known, but the number must have been considerable. So far the epidemic shows no signs of abating, nor is there any indication that the malady is likely soon to "burn itself out," as was at one time expected; the provisional figures published recently by the Indian Government for 1911 give the number of plague deaths for the year as no fewer than 842,086. It is noteworthy that the virulence of the epidemic has varied from time to time, some years, like 1900, being marked by a substantial reduction in the mortality, while others have shown a large increase. The highest point of the epidemic was reached in 1907, when the number of plague deaths for the year attained the appalling total of 1,315,892. The spread of the disease has not been uniform over all the provinces of India. We drew attention to this fact in THE LANCET of Sept. 16th last year, and pointed out that the brunt of the plague epidemic had, so far, been borne by three provinces, the Punjab, the United Provinces of Agra and Oudh, and the Presidency of Bombay, the combined population of which is rather less than 100,000,000, which is not quite a third of the total population of the whole of India. We now find that up to the end of June, 1912, in these three provinces about 6,000,000 people died from plague, or three-quarters of the total mortality caused in India by the epidemic since 1896. On the other hand, in some provinces, such as Eastern Bengal and Assam, the mortality from plague has hardly been appreciable; while in others the epidemic has never attained serious dimensions. This uneven incidence of plague in the provinces of India has been, and is still being, investigated by experts. Up to the present the results suggest that sanitation, the habits and customs of the people, and the nature of the construction of their houses, so far as they hinder infestation by rats, have an important influence upon the spread of plague and its persistence in a locality. It has not yet been determined whether the comparative immunity of Madras Presidency from plague is due to its large expenditure upon anti-plague measures, or whether due to natural causes.

In considering the terrible loss of life from plague in India it has to be remembered that some of the native races lack stamina and are deficient in powers of resistance to disease generally, and that the ravages of plague have been to some extent influenced by the insanitary habits and surroundings of many of the people. With regard to what has been done to cope with the epidemic during the past 16 years, we may say that strenuous and praiseworthy efforts have all along been made by the Indian officials to discover and apply the most effective methods of remedial action. To assist them and obtain further knowledge of the disease two Plague Commissions have been appointed, and much valuable information bearing upon plague has been collected. The admirable work done by the Advisory Committee for the Investigation of Plague in India has also led to important results and has settled some disputed points in the etiology of the disease. A serious factor which has greatly hindered the authorities in controlling the epidemic has been the attitude of the various native races. It has not, perhaps, been sufficiently recognised at home how difficult it has been for the officials in India to carry out anti-plague measures against the wishes of the natives, more especially in the earlier years of the epidemic. All sorts of Oriental devices were adopted to evade the regulations, and even removal of the sick to hospital was bitterly resented and sometimes resisted with violence and bloodshed; the medical inspection of corpses and the house-to-house visits to discover concealed cases were seriously opposed, sometimes with the help of a hostile crowd. Indeed, most of the procedures devised to protect the inhabitants of India from plague were regarded as affronts to their religion, or as a violation of their native customs and traditions. We may remind our readers that this opposition led to rioting in certain towns and districts, and even to assassination of English officials, as at Poona; British soldiers called out to quell disturbances were injured and some of them killed by the rioters, as at Bombay; plague medical officers were stoned in the streets and otherwise assaulted and their houses raided by the mob. In some places segregation camps were destroyed and plague hospitals burned down, and even policemen sent to protect the buildings were murdered and their bodies thrown into the burning ruins by the crowd, as at Cawnpore. Where rioters were arrested and taken to gaol it sometimes happened that the mob attacked the building to release the prisoners, leading to further casualties and deaths on both sides, as at Seringapatam. Such instances could be multiplied indefinitely, but sufficient has been said to show the difficulties under which the authorities laboured. Popular feeling in some localities ran so high that it was found necessary, if bloodshed was to be avoided, to suspend the carrying out of anti-plague measures. It may also be mentioned that political agitators seized the opportunity to spread false reports, just as in mediæval times, suggesting that the doctors were causing the epidemic for their own purposes by adding snake venom to the water-supplies, or other equally preposterous allegations. These reports had the effect of intensifying the resentment of the natives against all officials who were associated with the carrying out of anti-plague measures. Fortunately, at the present time such occurrences as those we have mentioned have become more rare; but even to-day, notwithstanding that the object of the plague procedures is better understood and

appreciated by the people, it is not always possible to persuade some sections of them to aid in the destruction of rats, since objections are raised on religious grounds or for sentimental reasons.

The present attitude of the Indian Government towards the anti-plague measures is set out in the recently published forty-seventh "Statement Exhibiting the Moral and Material Progress and Condition of India." From this it appears that in the light of the knowledge and experience acquired the authorities hold the opinion that it is now possible to deal satisfactorily with plague when effective control can be established over local sanitary conditions, as, for example, in military camps, gaols, and other institutions. But attempts to establish similar control over large areas involve too great an interference with the habits, prejudices, and sentiments of the people, and the application of measures of approved utility must therefore depend upon the particular circumstances of each locality and upon the character of its inhabitants. In the face of the great practical difficulties met with, the Indian Government for the present is confining its action largely to three principal measures, the first of which is the temporary evacuation of quarters in which plague is prevalent. To assist in carrying out this measure the Government has intimated its readiness to supply money and material to provide temporary dwellings and to alleviate the discomforts and distress which must accompany evacuating quarters, a matter in which they say the wishes and even the prejudices of the people must be consulted. The second measure is inoculation with Haffkine's prophylactic fluid, the efficiency of which upon the occasion of an outbreak has been placed beyond all doubt, though as a general or permanent remedy it is obviously of limited utility. The third measure is the systematic destruction of rats along with diminution of the food-supply to which these animals have access; and in the course of time such improvement in the structure of houses as shall render them reasonably rat-proof. It is to our mind unfortunate that the establishment of effective control over the sanitary conditions of the native population as a whole is at present obstructed by a large section of the natives themselves, and that the efforts of the officers of the Indian Medical Service are frustrated by the very people whom the improvements are intended to benefit. Indeed, it might very well be contended that the prolongation of the plague epidemic in India is partly due to the attitude of the natives and to their refusal to accept the advice and assistance offered to them by competent authorities.

The Language of the Public Orator.

LUCIDITY, brevity, dignity—the characteristics of the Latin tongue at its best—have earned for it the precedence it has held over its modern successors as the language of the public orator, a precedence it still maintains at our older seats of learning, chiefly owing, it would seem, to the fixity, or exemption from change, in which it has a distinct advantage over the mobile, the fluctuating, vernacular. Two of the most eminent philosophers of last century, Sir WILLIAM HAMILTON and JOHN STUART MILL, at variance with each other on many points, were at one on this that the "vulgar languages," while indebted to the Schoolmen for whatever precision and analytic subtlety they possessed, were yet so apt to be modified by daily, promiscuous, and unintelligent use as often to put the scientific thinker to dire straits in order "to avoid a word which, as originally coined, could have served his purpose admirably, but which, worn out or debased in the currency above referred to, had lost its true significance, if, indeed, it had not become susceptible of different meanings." No better illustration of the superiority of Latin to the modern European tongues in the characteristics it originally possessed and has never lost—no better justification for its retention on what may be called "state" or "full-dress occasions" by the universities of Oxford, Cambridge, and Dublin—could be adduced than in the recent commemorations of the bicentenary of the Medical School at the last-named seat of learning and of the 250th anniversary of the Royal Society.

The public orators who conveyed to both these distinguished bodies the congratulations of their several "Almæ Matres" in the traditional Latin acquitted themselves of their task with conspicuous good taste and dignity, the palm (if we may indicate a preference) falling to the Cambridge public orator, who more than maintained the standard of excellence in conception, in felicity of allusion, and in purity of diction which the academic world has long been accustomed to look for in the *orationes* of Sir J. E. SANDYS. His address to the Dublin University on its celebration of the 200th anniversary of its Medical School could hardly be improved upon for the skill with which it interwove the claims of the Three Kingdoms to remembrance in the rise and development of the said school—claims which, with a covert, not to say arch, reference to a much-debated question of the day, the orator touched upon in a sense which all parties would acknowledge as genuinely "Unionist." Equally commendable were his *orationes* in introducing for the honorary degree of Cambridge the six men of science delegated from abroad to represent their respective countries at the Royal Society's 250th anniversary. Professor EDWIN BRANT FROST, who holds the chair of Astrophysics at Chicago, must have earned the congratulations of his many friends in the two hemispheres as being so happily associated with Galileo as a "nuntius sidereus" (a reminiscence of the journal issued by the Tuscan astronomer under that name); while the Marquess EMANUELE PATERNÒ DI SESSA, of Palermo, had surely never heard his development of aromatic compounds and aniline dyes so poetically described—benzine, "matris haud pulchrae filia," posing, in turn, as the "filiarum suavium et pulchrarum mater." Russia, again, in her academic centres, must have been much gratified at finding her illustrious professor of physiology at St. Petersburg commemorated in faultless Latin as having demonstrated, among other things, the dependence of the process of digestion on the mental moods of the human subject—the gastric juices, moreover, adapting themselves to each kind of aliment and counteracting, in a health-giving sense, whatever noxious ingredients it may have contained. Prudentius, the Christian poet, by a delicate allusion, was made to adumbrate the "corporis certamen mentisque et corporis

societas intima," scientifically proved by the Russian physiologist, who was further commended for his practical confirmation of the dictum of Celsus the Roman, "ante omnia corporis sui naturam quisque norit." France's turn came next in the person of one of the greatest of living mathematicians, CH. EMILE PICARD, president of the French Academy of Sciences, known to student and professor alike for his profound analytical work, illustrated in his many publications by a truly French "stili lucidi lumine." Nor did the public orator omit a diplomatic side-glance at the triple *entente;* a political inspiration followed up, with loudly applauded effect, in introducing the delegate "ex Imperio maximo nobis utinam in perpetuum conjunctissimo," the illustrious professor of physics in the University of Berlin, HEINRICH RUBENS, whose brilliant vindication of CLERK MAXWELL'S findings in the physics of light, confirmed by equally brilliant inductions of his own, made him an especially popular guest at the University of Cambridge. This was one of Sir JOHN SANDYS'S happiest *orationes*, and will long be remembered for its generous recognition, on the literary side, of the achievements on the scientific. Finally came the representative of Scandinavia, Professor EUGENE WARMING, Denmark's great botanist, whose researches in the universal flora are nowhere more appreciated than in the country to which the "Regnum Danicum" is bound "vinculis teneris sed eisdem firmissimis." A graceful allusion to "corona nostra suprema" bestowed on the "Floræ sacerdos venerabilis" brought the *oratio* and the ceremony to a close, on which the University and its official spokesman are alike to be congratulated for the success of proceedings eminently calculated to enhance the prestige of the one and the reputation of the other.

And now for a practical suggestion. In their laudable endeavour to facilitate the acquisition of Latin *in statu pupillari* or at the undergraduate stage, professors and teachers of the language have enrolled many auxiliaries—among these the translation, into the idiom of Cicero or Cæsar, of such favourite English classics as Defoe's "Robinson Crusoe," of even Longfellow's "Hiawatha," while also adapting to scholastic use the "Colloquia" of Erasmus or the "Historia Rerum Scoticarum" of Buchanan. A more excellent device than either, it appears to us, would be a selection from the *Orationes* of Sir J. E. SANDYS, of Dr. MERRY, and of Dr. PALMER and Dr. TYRRELL, representing the Universities of Cambridge, Oxford, and Dublin, the said selection furnishing a series of tiny portraits of the notabilities of the day, in science, in literature, in art, or in affairs civil and military, and keeping the study of Latin in touch with contemporary life in all its more characteristic phases, thus serving the twofold purpose of familiarising the young student with the heroes of thought and action, of research and discovery, in language, moreover, which is itself a discipline in classical idiom, rhythm, and cadence. The portraits would be miniatures of characterisation, and the selection would constitute a gallery in which the outstanding personalities in the liberal professions or in the world of politics and science would typify all that was most distinguished in their respective *métiers*. The Classical Associations of England, Scotland, and Ireland, solicitous as they are to infuse a living interest into the so-called "dead" languages, might profitably consider this suggestion and do much (we are convinced) to serve the causes which, at their annual meetings, they show such anxiety to vindicate and promote.

Annotations.

"Ne quid nimis."

THE HOUSING PROBLEM IN ENGLAND AND AMERICA.

WE are pleased to hear that the corporation of Liverpool will be represented at the Fifteenth International Congress of Hygiene and Demography which meets at Washington on Sept. 23rd. In some respects better sanitary measures are applied in the United States than in England. Of this we have occasionally given instances in these columns. But if there is one thing in which the United States, and especially the city of New York, have allowed most dangerous evils to grow up it is in regard to the housing question. On the other hand, we are not aware that there is any city which has done more and better in dealing with the most difficult phase of this question than Liverpool. When, four years ago, the last great International Congress met in America it was stated that at New York alone there were 360,000 rooms, mostly in the central part of large tenement dwellings, where daylight could never penetrate. This was said at the Washington International Congress on Tuberculosis of 1908. As most of these dark compartments were used as sleeping rooms they were denounced as a cause of the frequency of tuberculosis. But while the want of light favours the development of tuberculosis, there is also the question of general hygiene. By the early application, in Germany for instance, of what is now called town planning, much has been done to save the future from a repetition of the errors of the past. New methods from the beginning are, however, comparatively easy, but to deal with the past is hard. How are large open yards going to be carved out of the centre of densely populated block buildings? Then, when sanitary dwellings have been constructed, how will the better class be kept out of them so that they may be inhabited by the extreme poor for whom they are intended, and whose very poverty constitutes the main difficulty of the housing problem? Dr. E. W. Hope, the medical officer of health of Liverpool, will be able to explain how this has been done in the very port where visitors from America land in such large numbers. Last May the corporation of Liverpool was housing 9000 souls in new dwellings, and had also caused old dwellings to be partly rebuilt or extensively repaired and improved. So recently as last June yet another addition was made to the work done. What is known as the Bevington-street area had been swept away and all the abominations it contained. The district is now rebuilt, and 226 tenements, including 52 self-contained cottages, were recently inaugurated. Formerly this district consisted of 295 houses, of which 267 were back-to-back and very insanitary. They have all been demolished, and one street was not rebuilt, but converted into a playground. Instead of narrow courts there are new streets at least 35 feet wide, and one has a width of 60 feet. Trees are planted wherever there is any hope that they will be able to grow, and the playground is divided into one side for girls and another for boys, with a bandstand in the middle. The newly opened and rebuilt Bevington district can accommodate 1372 persons in 680 rooms at a cost in land and

building of about £100,000. This will bring up the total spent by the corporation of Liverpool in providing cheap sanitary dwellings for the extreme poor to £659,187. In the majority of cases the rent charged is slightly below 1*s.* 6*d.* per week per habitable room. In the United States even a navvy gets one and a half dollars per day wages, and generally it is two dollars. In Liverpool the corporation is striving to provide sanitary dwellings to persons who do not earn more than four or four and a quarter dollars (16*s.* to 17*s.*) per week. The difficulty is therefore much greater in England than in the United States, for the difference in the cost of living is not nearly so great as in the wages earned. Nevertheless, in regard to the housing of the poor it is England, and especially Liverpool, that sets the pace. There should be a large contingent of British members at the Washington congress to explain our progressive sanitary methods; thus, while themselves learning many things, they may also help to teach.

THE MIDWIVES ACT IN MANCHESTER.

THE report of the operations carried on in Manchester during 1911 under the Midwives Act, 1902, presented by the Midwives Supervising Committee to the city council is a document of much interest. The statement of the supervising officer, Dr. Barbara Martin Cunningham, shows that during the ear 166 midwives gave notice of their intention to practise in the city, and that they attended 10,937 labours. Among these patients there were 72 cases of puerperal fever with 7 deaths. The percentage of the occurrence of puerperal fever among all the cases attended was 0·66, while that among cases attended by midwives having puerperal fever cases in their practice was 1·14. During the year 135 cases of puerperal fever in all were notified among 18,583 births registered in the city of Manchester, which has a population of 716,734. Of these 135 cases 26 died, or a case mortality of 19·2 per cent. In 44 of these cases midwives alone were present at the confinements. Thirty-eight of the cases were treated at home, and of these 28, or 73·6 per cent., recovered, 16 with good health and 12 with poor health subsequently. Eighty-five were treated at the Monsall Hospital, and of these 73, or 85·8 per cent., recovered, 59 with good health and 14 with poor health. In 10 of the cases which recovered in the hospital the women when seen between six and eight months after the attack were again pregnant, an interesting proof of the completeness of their recovery. Dr. Cunningham concludes from these figures that hospital treatment of cases of puerperal fever leads to a greater number of recoveries, and that the recoveries are more complete. No doubt the adequate nursing obtained in the hospital, and the longer and more rigorous confinement to bed is the explanation of these better results. In 67 cases during the year it was found necessary to suspend midwives. Sixty of the cases were in connexion with puerperal fever, and the women were only off work for a few hours while personal disinfection was carried out. During the year the notification of 643 stillbirths was obtained through the returns from the cemeteries, or a percentage of 3·4; of these 314 were notified by midwives, and the stillbirth-rate of the population in midwives' practice was calculated as 0·44 per 1000. As Dr. Cunningham points out, the large number of cases of stillbirths in breech presentations with perfect full term children—namely, 37—indicates that if medical assistance had been forthcoming in all these cases a large number of the children might have been saved. The midwives Supervising Committee, in considering the reports submitted to them, decided that *primâ facie* cases of negligence or misconduct had been established against three midwives, and reports respecting these were forwarded to the Central Midwives Board. In addition to these, 15 midwives were dealt with by the Supervising Committee themselves for various breaches of the regulations of the Board. In one case legal proceedings were taken against a woman for practising habitually and for gain as a midwife although not certified under the Act, and a conviction was obtained, a fine of £5 and costs being imposed. During the year four special nurses were provided by the committee, two of whom dealt exclusively with cases of ophthalmia neonatorum with most satisfactory results. The others were employed in cases where the midwife could not attend for the time being or in septic cases. The report shows that the work has been very completely carried out during the year, and the results obtained are greatly to the credit of the supervising officer, and to the committee whose help and support have undoubtedly been of the utmost value.

RUPTURE OF THE DIAPHRAGM: AN INTERESTING CASE.

IN the *Boston Medical and Surgical Journal* of August 8th Dr. F. J. Cotton has reported a case of a rare injury—rupture of the diaphragm. A carpenter, aged 42 years, was taken to hospital on August 8th, 1910, half an hour after he had fallen from a roof about 40 feet high. He landed on his left side on a wooden picket-fence. On admission he was not in great pain, and there was little evidence of shock. The temperature was 97° F., and the pulse 100 and of fair quality. There was not much pallor. On the left side was a wound, packed with an emergency gauze dressing, extending from the ninth rib nearly to the iliac crest. When the packing was removed a coil of large intestine protruded. Little hæmorrhage was obvious. Under ether the descending colon was found exposed and protruding through the wound. It was bruised and its peritoneal coat was extensively torn, but there was no complete rupture of the bowel. The wound was enlarged upwards, and the eighth and ninth ribs were found fractured. The distal fragments were removed to make room. The spleen was found extensively injured, but it was nowhere torn through, and as it was small and tough and had a thick capsule it bled very little. Further exploration showed a big tear in the diaphragm plugged by the stomach, part of which had been forced into the chest. On passing the hand through the tear the herniated stomach was found to extend as high as the third rib. The stomach was so distended that puncture with a trocar to evacuate gas was necessary before anything more could be done. The puncture was sewn up and the stomach was dragged down into the abdomen. The tear in the diaphragm was then found to run from before backwards and to measure between 4 and 5 inches. It was sutured with heavy catgut, not without difficulty, for it was necessary to insert a suture on one side during inspiration, to wait for the next respiration before completing the stitch, and again to wait for a third respiration before tying the suture. At last air-tight closure was effected. The pleural cavity was left filled with air in an amount which would correspond to the inspiratory position. This was done because it was realised that pneumothorax was inevitable and unimportant, and that the danger lay in the sutures being torn out in consequence of distension of the intestines. For the same reason it was decided to drain rather than to repair the damaged descending colon. The gut was in a recoverable condition, but was so bruised that it was almost certain to become distended. Accordingly a "Mixter tube" was sewn into the descending colon, and to it was attached a rubber tube to drain the intestinal contents over the side of the table. Three tears in the peritoneal coat of the colon were repaired with Pagenstecher sutures. The tears in the spleen were packed with gauze, which fully controlled the hæmorrhage. What

little free blood was in the abdominal cavity was washed out and the abdominal wound was sutured in layers, leaving only room for the tube and the ends of the gauze packing in the spleen. Little shock was produced by the operation, and on the following day the general condition was excellent. On the second and third days there was slight abdominal distension. On the third day the gauze was removed. Enemata were administered with satisfactory results, and little passed through the Mixter tube except gas. On the fifth day a copious discharge of fæces from the tube began and some pus was discharged beside it. On the twelfth day the tube was removed, leaving a fæcal fistula. Four days later fæces were passed by the rectum, and from this time the discharge through the fistula ceased. On the thirtieth day the patient was discharged with the wound nearly healed. The behaviour of the pneumothorax is of interest. A physician, Dr. R. C. Larrabee, reported that on August 20th the left chest in front was markedly tympanitic. The heart could not be percussed to the left of the sternum but extended two inches to the right of it. Over the tympanitic area respiratory sounds were nearly absent. On the 26th the heart could be percussed to the left of the sternum but was not in its normal position, tympany over the left chest was less marked, and the respiratory sounds, though diminished, were easily heard. There were a few râles at the base of the lung. Six months later the man was seen again. He could work as well as ever, but there was a gap in the abdominal wall at the site of the scar, where a hernia threatened to form. He was advised to wear a supporting belt. The chest showed nothing abnormal and the diaphragm appeared to be acting as well as ever.

HEMIATROPHY AND HEMIHYPERTROPHY AND THEIR LATERAL LOCALISATION.

Dr. Ewald Stier, of the Charité Hospital in Berlin, has recently devoted much attention to the subject of growth anomalies of all sorts, and has had more particularly in view in these investigations, which are recorded in the *Deutsche Zeitschrift für Nervenheilkunde*,[1] the question of the side of the body on which the anomalies occur. It is stated in some text-books, for instance, that hemihypertrophy of the face, trunk, limbs, or of the whole half of the body, is more apt to occur on the right side than on the left. Dr. Stier has collected 120 cases of hemihypertrophy from the literature, and finds that the proportion of right-sidedness to left-sidedness is 75 to 45. On the other hand, he has collected the records of 141 cases of hemiatrophy, and gives the proportion as 47 on the right side to 94 on the left. If these two sets of figures are compared, it would appear a fair deduction to make that anomalies consisting essentially in overgrowth have a predilection for the right side of the body, while anomalies of the nature of undergrowth are more commonly met with on the left side. Data of this sort are interesting and suggestive, but the matter becomes much more interesting when an investigation is made into the right-handedness or left-handedness of the particular individuals concerned. Unfortunately, the figures available for the elucidation of this subject are comparatively small, since little attention has been given to it. Dr. Stier, however, is able to quote the following facts. In the matter of hemihypertrophy, in 9 right-handed cases the hypertrophy was on the right side in 7, on the left side in only 2; in 3 left-handed cases it was on the left side in all. Carrying his investigations farther, with the help of his colleagues at the Charité, Dr. Stier has found 38 cases of supernumerary nipples, 27 being on the right side and 11 on the left. Every one of these 27 right-sided cases was right-handed; of the 11 left-sided cases, 5 occurred in left-handed persons and 1 in an ambidextrous individual. He has also collected information on syndactyly. Of 32 cases of this anomaly—one of the undergrowth type—9 were on the right side and 23 on the left. In at least 18 of these 23 the patient was right-handed; in at least 3 of the 9 the patient was left-handed. Other figures in reference to other developmental anomalies are quoted from which the generalisation is made that in all anomalies of overgrowth (*Luxusbildungen*) the right side of the body is much more frequently involved than the left, whereas in anomalies of undergrowth (*Hemmungsmissbildungen*) the left is more commonly the site of the condition than the right. Moreover, this question of laterality bears a definite relation to the matter of the leading or superior hemisphere of the individual concerned; thus the plus anomalies occur on the right side in right-handed people, and the minus anomalies on the left side, the left hemisphere being their leading or superior hemisphere, while in left-handed persons the plus anomalies are on the left side, the right hemisphere leading in their case. Dr. Stier cannot believe that these data are the result of a mere accident. He refers, for instance, to the cases of so-called "crossed aphasia" which have been recorded from time to time, where a stroke on the left side has been associated with aphasia in presumably right-handed people, and shows that these patients have really been potentially left-handed; education very frequently makes a naturally left-handed person right-handed, but the reverse process never occurs. It would appear, then, that nutritional and trophic processes are intimately linked to the superiority or inferiority of one or other cerebral hemisphere, and it may be that further investigation will support the conclusions to which Dr. Stier has come. It is said to be the case that the teeth develop somewhat more quickly on the right side of the jaws than on the left, and Dr. Stier cites evidence to show that this is true at least of the wisdom teeth. Of course, it is important to avoid drawing hasty conclusions from insufficient data, but the subject is one on which it may be hoped further light will some day be shed.

[1] Band xliv., Heft 1-2, S. 21.

THE MAN WHO SAW NAPOLEON.

IT is a question whether centenarians ever live much beyond a century, though we have recorded in our columns in recent days a good many instances of persons still living at ages from 102 to 105. In France the age of 105 is said to have been reached by a venerable centenarian still living in Ivry. This veteran remembers having frequently seen Napoleon I. Indeed, in the gardens of Saint Cloud the great Emperor often paused to pat his cheek and allowed him to become the playfellow of the King of Rome. M. Pierre Schamel-Roy is credibly—that is to say, according to documentary evidence—reported to have been born on August 25th, 1807, at Versailles. It was the year of the Treaty of Tilsit. The child was carried about in the gardens of Saint Cloud by his grandmother, who had been in the service of one of the maids of honour of the Court of Louis XV. and who spoke of Louis XIV. to the boy. He was a weakly child and suffered from a spinal complaint, from which he recovered in later years. A well-known French journalist, M. Maurice Loel, interviewed him early in the present year, and found him hale and hearty and in full possession of his senses. His blue eyes, only slightly clouded by age, appeared those of a child. His voice, shrill at times, was generally grave (*dans le registre grave*). It is the mauve-coloured eyes of Napoleon that he remembers most vividly. Of

the Emperor's height he has no recollection. The last time the boy saw the Emperor was in 1814. He was then 7 years old, an age of the impressions of which many people have a vivid recollection. Napoleon remains the central and shining figure in the memory of this wonderful survivor from the past, though he was intimate with Talma, whose theatrical dresser he became, and with Talma's friend Lamartine. In 1848, after the affair of the Palais Royal, his foot was crushed, and Lamartine offered him a Government tobacconist's shop as a reward for his military prowess. To the physiologist and, indeed, to all medical men these records of longevity are necessarily of some importance. In this case early ill-health seems not to have been prejudicial. We are told nothing as to subsequent illnesses, diet, and so forth, but we believe that M. Schamel-Roy has been a wine-drinker like the rest of his compatriots and that his work has been always ight. Napoleon III., whose horses he often exercised, appointed him chief *costumier* at the Paris Opera House. Of late years his *métier* has been that of centenarian. His famous predecessor in point of age, Michel Eugène Chevreul, lived from August 31st, 1786, to April 10th, 1889. Chevreul was therefore his junior.

ACUTE BULBAR PALSY FOLLOWING ON MUMPS.

IN the *Review of Neurology and Psychiatry* for August Dr. Joseph Collins and Dr. Robert G. Armour, of the Neurological Institute of New York, publish a case of some clinical interest. A strong, active boy, aged 11 years, developed signs of mumps, and for a week complained of the swelling and of difficulty in swallowing, but as he did not look or feel ill otherwise he was not kept in the house. Eight days from the onset of the parotitis he complained of headache and of giddiness, and on the next morning he was uncertain in his gait and had some little difficulty in maintaining his balance. On the eleventh day from the commencement of the illness he was examined by one of the physicians who report the case and found to have left facial paralysis, nystagmus on looking to the left, difficulty in swallowing and in articulation, tachycardia, and a rectal temperature of 100·5° F. On lumbar puncture the cerebrospinal fluid presented no abnormality, and in the blood there was a slight leucocytosis (15,000 whites). No symptoms or signs of meningitis were present. The boy remained perfectly conscious, but every hour the difficulty in swallowing, breathing, and speaking increased. In the course of a day the dysphagia became absolute, the voice became nasal, toneless, and then disappeared; the dyspnœa assumed the Cheyne-Stokes type, cyanosis set in, and some 48 hours after he was first seen by a physician he died, remaining conscious almost to the end. On subsequent examination of the central nervous system it was found that the pia-arachnoid was markedly œdematous and its vessels engorged, and a similar condition was noted on the surface of the cortex. On cutting through the pons and medulla in the fresh state the ependymal lining of the fourth ventricle was seen to be equally œdematous and injected. Stained sections of these parts of the nervous axis revealed a severe inflammatory round-cell infiltration, most intense at the level of the olives, with destruction of nerve elements, great swelling and engorgement of all blood-vessels, necrosis in the centre of many of the inflammatory foci, and all stages of chromatolysis in the cells of the cranial nerve nuclei and elsewhere. In short, the pathological picture was just such as is seen in poliomyelitis. The foci were scattered irregularly through the pons and medulla, but were most numerous in the formatio reticularis. The case, then, is one of an acute, profound, and rapidly fatal infection of the central nervous system, confined almost entirely to the pons and medulla, where the apparent origin of the infection was a mild attack of mumps, and where the pathological basis of the disease was an inflammatory state that could not be distinguished from poliomyelitis. A polioencephalitis inferior of this kind is not common, but on the other hand it is no rarity, for similar cases have been described in some of the recent epidemics. In this instance, the case was sporadic, and its apparent starting point is of considerable interest, in view of the uncertainty which still prevails as to the mode of entry of the virus of poliomyelitis.

OYSTERS.

THE first day of September suspends the "r" canon for a while, and the oyster is regarded as seasonable. "The four sad months wherein is mute that one mysterious letter that has power to call the oyster from the vasty deep" have passed, and "the close season" is closed. The summer safeguard is, of course, a sensible rule, since it protects the fisheries during the breeding season, while the consumer is relieved from the prejudice which is likely enough to arise if the oyster is eaten when it is out of condition, or not in perfection, between the months of May and August. The rule that oysters ought only to be eaten in the months which have an "r" in them was in vogue in the Middle Ages, as is clear from the old Latin line "mensibus erratis vos ostrea manducatis." A close season applies just as much in fact to the oyster as to fish and game, but of the meats, pork is the only one which shares the same close season as the oyster. There can be little doubt that the oyster, particularly when it is obtained from reputable beds as at Colchester and Whitstable, can be consumed with greater confidence than was the case not many years back. The vigilance of the medical department of the Local Government Board was aroused by the incidence of certain typhoid cases; these were traced to oyster eating, and since the well-known and tragic epidemics referred to a scrupulously clean state of the breeding and maturing grounds for oysters has been insisted upon. The popularity of the oyster demanded this intervention on the part of our public health authorities. Our own analyses have shown that although three-fourths of the raw oyster consist of water, the remaining fourth comprises all classes of food substances—namely, proteid, carbohydrate, fat, and mineral salts. Moreover, the flesh of the oyster contains these substances in a peculiarly assimilable form, amongst which must be reckoned the albumins and organic phosphorus compounds. Lastly, the pleasing flavour of the oyster tends substantially to secure the assimilation of its valuable parts, and so its comparative expensiveness is partly compensated for by the fact that little or none of its materials is wasted in the metabolic processes.

THE USE OF COPPER SALTS IN THE GREENING OF FOODS.

THE question of the use of salts of copper in the greening of foods, which was referred by the United States Department of Agriculture to the Referee Board of Consulting Scientific Experts, has now been reported upon. Exhaustive investigations, spread over more than two years, have led to the following main general conclusions. The use of salts of copper in the colouring of vegetables cannot be said to reduce or injuriously affect the quality of such vegetables as far as the food value is concerned. It may, however, conceal inferiority by simulating a state of freshness not possessed by the vegetables used. In attempting to define a large daily quantity of copper regard must be had to the maximum amount of greened vegetables that might be consumed daily. A daily dose of 100 grammes of coppered peas or beans,

which are the most highly coloured vegetables in the market, would not ordinarily contain more than 100 to 150 milligrammes of copper. Such a quantity of greened vegetables is so large, however, that it would hardly be chosen as a part of a diet for many days in succession. Any amount of copper above 150 milligrammes daily may, therefore, be considered excessive in practice. A small quantity is that amount which, in the ordinary use of vegetables, may be consumed over long periods. From this point of view 10 to 12 milligrammes of copper may be regarded as the upper limit of a small quantity. The Referee Board further reports that the investigations show that, in certain directions, even such small amounts of copper may have a deleterious action and must be considered injurious to health. The Food and Drugs Act of June 30th, 1906, provides that a food is adulterated if it contains any added ingredient which may render it injurious to health or conceal damage or inferior quality. The Department of Agriculture has therefore issued an official decision (F. I. D. 148) that all foods greened with copper salts are positively adulterated under the first provision of the law referred to above, and that in certain cases they may be adulterated under the second provision. This decision affects foods offered for entry at the ports, as well as domestic supplies.

LIGATURE OF THE INTERNAL MAMMARY ARTERY FOR STAB WOUND.

FEW cases of ligature of the internal mammary artery have been recorded. In the *Interstate Medical Journal* for June Dr. N. B. Carson has reported the following case. He was called to a man who about five hours before had been stabbed in the chest. On arrival he found a well-developed man, aged about 30 years, with a wound on the right side of the sternum, between the third and fourth ribs, about three-quarters of an inch in length and three-eighths of an inch in breadth. It had evidently been made with a narrow-bladed knife, which, entering the pleural cavity, had wounded the lung and cut the cartilage of the third rib at its junction with the sternum. The bed-clothes were saturated with blood, and the man was in a state of collapse. There was hæmatopneumothorax, the right chest being about half full of blood, and the subcutaneous tissue around the wound was emphysematous. After cleansing the parts the wound was covered with an antiseptic dressing and a tight bandage was applied around the chest in the hope that by limiting the movements recurrence of the hæmorrhage, which had ceased, might be prevented. The patient did well until five days later, when an attack of coughing while drinking caused hæmorrhage. The hæmorrhage recurred at intervals, and on the following day it was decided to tie the internal mammary artery, to give the patient the only chance of recovery, and that a slight one. Under ether the wound was enlarged, but the artery could not be seen on account of the blood which was forced out through the wound by coughing. About an inch of the seventh rib was resected and about three pints of blood were emptied out of the pleural cavity. The bleeding end of the artery was then seen close to the sternum, but it could not be caught hold of. The cartilage of the third rib was resected and the artery was caught and ligatured without further trouble. The lung was only partially collapsed in consequence of old adhesions. It felt firm and did not crepitate. The patient was taken from the table little worse than before the operation. He recovered from the operation, but succumbed to an attack of septic pneumonia. In his Königsberg dissertation Schwarz refers to 52 cases of wound of the internal mammary artery reported during the last century. Of these, 7 occurred during operations. Of the remaining 45, 9 were fatal from hæmorrhage, which in 4 took place from a wounded lung, heart, or other neighbouring structure, in 4 from the artery itself, and in 1 from an undetermined source. Of the 36 cases of survival from the immediate effects the wound became infected in 24, and of these 18 were fatal. Of the 12 cases of non-infected wounds, 4 were fatal. There were 21 cases of secondary hæmorrhage—16 in the infected cases, 5 in the non-infected. Jopson [1] reported a case in many respects similar to the present one, and advised primary ligature of the artery as soon as possible, although the bleeding has stopped. With this Dr. Carson agrees. Le Conte doubts, when the artery is injured as low as the fourth or fifth interspace, whether the bleeding will be severe enough to necessitate ligature, but states that if the injury is as high as the second interspace death will result unless the artery is immediately ligatured. Dr. Carson is convinced that the artery can be reached more satisfactorily and quickly by resecting the costal cartilage than by enlarging the original wound.

WE regret to announce the death of Mr. Leonard A. Bidwell, senior surgeon to the West London Hospital and Dean of the West London Post-Graduate College.

MEDICAL COÖPERATION IN SICK-CLUB WORK: THE MUNICH SYSTEM.

(BY A SPECIAL CORRESPONDENT.)

IT is interesting, and at the same time significant, to note that in every country—and Great Britain makes no exception—the introduction of National Insurance has proved the most effective measure for uniting the medical profession, and has forcibly brought home to every member the necessity for joint action in order to safeguard professional as well as economic interests. Of recent years a further step has been made in the direction of medical coöperation in dealing with sick clubs in Germany, and the organisation of these medical associations in their dealings with sick clubs offers many points of interest at the present moment, although it cannot be asserted that they would commend themselves to the British practitioner.

As has already been stated in THE LANCET, German sick clubs pay their medical attendants a *per capita* allowance averaging 4*s*. This covers ordinary medical attendance, while operations and other extra work are paid for on the basis of the charges set forth in the official scale of fees. It is customary to divide this *per capita* allowance among the single club doctors in such a way that the members select annually one doctor to attend them, if necessity arises, during the ensuing twelvemonth, and that doctor receives the equivalent *per capita* remuneration according to the number of his prospective patients. In some cases the club pays the total amount for medical attendance on behalf of its members to the local medical association, which then undertakes the division of the money among its members according to a mutually established system of points. This system is meeting with increasing favour among German club doctors, and the organisation in the city of Munich may be adduced as an illustration of the *modus operandi* adopted.

Munich has a population of 596,467 inhabitants. The "Munich Medical Association for the Free Choice of a Doctor" numbers now 512 members, including consultants and professors, who act as medical attendants to the 260,000 insured persons belonging to 60 different sick clubs. The sick clubs do not make contracts with the single medical men, but with the association as a whole, and the members of all the sick clubs participating in this arrangement are at liberty to call in the services of any one of the doctors belonging to the association. The medical practitioner who becomes a member of the association pledges himself not to enter into any contract with a sick club, and to abide by the rules of the association. In this way every insured person is guaranteed the maximum freedom of choice in his selection of a medical attendant in each case

[1] Annals of Surgery, 1906.

of sickness. Here we have two organisations dealing corporately with each other, and the interests of the individual medical man are safeguarded by the association of which he is a member. In the case of differences between the two bodies, these are referred to a board of arbitration consisting of an equal number of practitioners and representatives of the sick clubs.

The most striking point in the organisation of this association is the system of controlling its members in the execution of their professional duties by self-elected *confrères*, and it may be safely affirmed that the rigid control exercised in this way would be resented by British practitioners. In the first place, a special commission, consisting of a number of general practitioners and specialists, is elected by the majority of the association from its members. Two members of this "Patient Control Commission" are on duty daily, and it is their duty to control the diagnosis made by the ordinary medical attendant of every insured person reported on the sick list. They are empowered to undertake this examination without the consent of the practitioner in charge of the case. It seems strange that medical men should be ready to permit this degree of interference in their professional duties of their own free will, but by this control the medical attendant is relieved of all responsibility, while the members of the control commission are able to detect with greater facility any cases of malingering. During the past year the commission caused the receipt of sick pay to cease in 12,230 cases, and after deducting the sum of £437 paid by the clubs in fees to its members, it is estimated that a saving of £6901 was effected, representing an economy of about 5¼ per cent. on the total expenditure of the clubs.

Another commission, consisting of five medical men and an equal number of pharmacists appointed and paid by the clubs, supervises every prescription written out by the club doctors. The pharmacists have to see that the prices charged for each prescription correspond with the prices of the official Government scale of charges for medicines (in Germany the price of prescriptions is regulated by a fixed tariff established annually by the Imperial Government, and the charges are uniform for rich and poor alike), and also to see that so-called expensive forms of prescribing do not occur too frequently. Thus the practitioner found to prescribe on a too liberal scale the use of superfluous syrups in mixtures, of infusions, proprietary medicines or specialities, &c., is admonished by this court of his *confrères*, as all such prescriptions are sorted out by the controlling pharmacists and handed over to the medical members of the commission to deal with. In this way the association has succeeded in reducing the average price of each prescription for members of sick clubs from 1*s*. 2*d*. to 11*d*., without, it is said, prejudicing the patient's chances of speedy recovery.

Of particular interest is the system adopted for dividing the remuneration for medical attendance paid by the sick clubs collectively into the banking account of the association. The sick clubs in Munich allow a *per capita* rate of from 4*s*. to 5*s*. for ordinary medical attendance; special work is paid for according to the official scale of fees. Every member of the association has to keep a daily record of his relations with members of sick clubs, and a duplicate copy has to be sent in quarterly to the board. Here each list is carefully examined, and if there is any doubt regarding the treatment extended to a patient in any case, the list is laid before the Remuneration Control Commission, which deals with the medical attendant; if the members decide that the patient was "over-treated" then a corresponding deduction is made. It may be mentioned that the board of the association is empowered to inflict small fines upon the members for transgressions of the rules of the association. In the case of certain expensive forms of treatment, such as massage, the use of electricity, X ray examinations, &c., the medical attendant is required first to lay the facts of the case before the commission and obtain its permission to adopt the proposed form of treatment. A copy of every X ray photograph taken has to be delivered to the sick club to which the patient belongs; this files them for future reference, as in the case of an accident occurring at a later date to the same member.

No distinction is made, in the division of the remuneration among the members of the association, between general practitioners and specialists, and the doctor who has performed a special operation is entitled to the same fee as if it had been carried out by a specialist, while the specialist who is consulted by an insured person during consulting hours in a matter of routine work will receive the same amount allotted to him as the general practitioner for a visit from a member of a sick club during his consulting hours. The extra remuneration of the specialist is only given for special work, such as examinations or operations.

The total amount disbursed by the 60 sick clubs in Munich during the past year for medical attendance on behalf of their 260,000 insured and paid into the association's account came to £70,559, an increase of £7688 over the preceding year. After deducting 4 per cent. to cover the cost of administration of the association and to provide an allowance to the reserve fund, the residue was paid out to the members. Thirteen members received over £500, while the others participated as follows:—

10	members	received	between	£450	to £500
12	,,	,,	,,	400	,, 450
14	,,	,,	,,	350	,, 400
15	,,	,,	,,	300	,, 350
16	,,	,,	,,	250	,, 300
40	,,	,,	,,	200	,, 250
41	,,	,,	,,	150	,, 200
58	,,	,,	,,	100	,, 150
89	,,	,,	,,	50	,, 100

The remaining 204 members each received less than £50. The average remuneration for sick club work during the past year thus amounted to £131, calculated for the 512 doctors forming this association, although 308 received each over £50, and the remainder under this amount.

But the activities of this association are not limited to safeguarding the economic interests of its members. On the contrary, it may be justly proud of the work it has done outside this part of its programme. Thus, friendly relations have been established with the sick clubs in place of the customary "sweating" of the profession, and various commissions consisting of its members are engaged in improving the conditions of life of their fellow citizens. Popular lectures are given on hygiene, and measures have been adopted to prevent the spread of certain diseases, to suppress drunkenness, to decrease infant mortality, to promote the proper treatment of tuberculosis, and to combat the occurrence of ophthalmia neonatorum. On other lines also the association has voiced its proposals for the benefit of the public, dealing with such questions as unemployment, the provision of suitable playgrounds for school children, and has taken part in public meetings called to consider the ways and means of combating the increased cost of living.

The annual report of the association shows that while actively engaged in safeguarding the material as well as professional interests of its members, perhaps in some instances by means which appear to us as trespassing considerably on the professional freedom and dignity of the individual member, it has taken a large share in advancing the hygienic and social conditions of the general public, and in this way not only the organisation as a whole, but the individual medical man has played an important part in shaping the destinies of his brethren and in promoting the good of the community.

ANNUAL REPORT OF THE REGISTRAR-GENERAL FOR 1910.

I.

IN a recent number of THE LANCET[1] we noticed the introductory remarks of Mr. Bernard Mallet in the seventy-third annual report, referring more particularly to his justification of the changes now in progress at the central office for the collection and classification of the births and deaths registered in each year. These changes will, it is hoped, facilitate the presentation of the facts in a form more in accordance with the requirements of the local administrative authorities and their medical officers of health. We may now discuss Dr. T. H. C. Stevenson's remarks on the vital statistics of the year under notice.

Continued Depression of Birth-rate.

The birth-rate in this country still continues to decline. The crude rate stated in terms of total population must

[1] THE LANCET, August 17th, 1912, p. 466.

obviously vary with the proportion of females living at conceptive ages, and with the proportion of these who are married; but, for reasons stated in the text, the present time is inopportune for the discussion of birth-rates in this relation. In the year 1876 the birth-rate in England and Wales attained the highest point on record—namely, 36·3 per 1000 of the population of both sexes, but since that date the ratio has, with a few insignificant exceptions, fallen steadily until in the year now under notice it reached the low point of 25·1 per 1000.

The rate of natural increase of population by excess of births over deaths has fallen from 14·56 per 1000 living in the quinquennium 1876–80 to 11·56 in the quinquennium 1906–10. Should the decrease in the birth-rate still continue, it is to be feared that the diminution in natural increase may become accelerated, as the comparatively low death-rates now attained offer less scope than formerly for compensation in this direction.

Illegitimate Births.

Illegitimacy in England and Wales is still decreasing. It is sometimes stated as a proportion of illegitimate births to total births. This method is, however, objectionable, for it expresses one variable (the rate of illegitimacy) in terms of another (the total birth-rate). The best method at present available is that of expressing the rate of illegitimacy in terms of total population. Comparing by this method the rate of illegitimacy in 1910 with that obtaining in 1876–80, there has been a decline of 41 per cent. The rate of illegitimacy varies in the several counties. It is generally highest in counties containing few large towns, and continues persistently high in the four northern counties, in East Anglia (except Essex), and in North Wales.

In the Registrar-General's recent annual reports the system of publishing international vital statistics has been gradually developed. From another section of the present report it will be seen that in 1900–1902 the proportion of illegitimate births among the unmarried and widowed section of the population aged 15–45 years was in every country, except the Netherlands and Ireland, above the proportion recorded in England and Wales. In the period here referred to the ratio of illegitimate births in each 1000 unmarried and widowed women of conceptive ages was only 3·8 in Ireland, 6·8 in the Netherlands, 8·5 in England and Wales, and 8·9 in New Zealand, whilst the proportion reached 24·2 per 1000 in Denmark, 27·4 in the German Empire, and 40·1 in Austria. No single explanation will suffice to account for the wide variations in these rates of illegitimacy; but it is obvious that differences of religion, of social conditions, of race, and of the laws regulating marriage, must severally be taken into account.

Continued Fall of Death-rate.

We have already mentioned that in the year under notice English mortality reached the lowest point on record. It was only 13·5 per 1000 at all ages and in both sexes, and showed a decrease of 1·1 per 1000, as compared with the preceding year. To the production of this low mortality favourable meteorological conditions, especially the abnormally cool summer, undoubtedly contributed very largely. This remarkable fall in mortality is by no means peculiar to England, a similar fall having been experienced in most of the other countries of Europe concerning which reliable statistics are available. Reviewing the mortality records of England since the establishment of civil registration in 1838, we find that after correction for variations of age and sex constitution of the living, the annual rate of mortality reached its maximum for both sexes in the quinquennium 1846–50, when it was equal to 22·4 per 1000. From that time onwards the rate fell gradually and intermittently until 1891–95, when it reached 18·5 per 1000, but since that period the fall has been steadier and much more rapid, the total decline subsequently recorded being approximately equal to that experienced during the preceding 45 years. In the year 1910 the death-rate was only 60 per cent. of that recorded in the later "forties." It is important to observe that the passing of the Public Health Act in 1875 was followed in the next two quinquennia by a considerable decline in mortality, and although this improvement was arrested during the 14 years next succeeding, it has been renewed with increased vigour ever since. In this country the rate of mortality among males has always been greater than among females. Prior to 1861 the excess of male mortality was equal to about 6 per cent., whereas from 1896 to 1905 it was as much as 14 per cent., and since that period it has averaged 13 per cent.

Mortality in Other Countries.

During the current century all the principal European countries have experienced lower rates of mortality than had ever been recorded for them before. In the case of England and the Netherlands this has happened in no fewer than seven of the ten years. The countries showing the greatest decline are Prussia and Spain, while Norway shows the least. The lowest death-rate recorded in Ireland was that for 1896, when it was only 16·7 per 1000. From an instructive table we learn that while the death-rates of the several countries are unequally affected by variations of age and sex constitution, no other European population was, ten years ago, so favourably constituted with respect to mortality as was that of England. In every instance the crude death-rate requires correction by diminution in order to be fairly comparable with that of England. The reverse holds good for Australasia, but this is due to the small proportion of aged people in the Australasian population, which in that respect is affected by the vast immigration of earlier years. For the purpose of showing the mean differences of mortality in certain countries the comparative mortality figures are appended to the report. From these we see that the highest mortality is experienced in European Russia, where the comparative figure is 1667, and the lowest in New Zealand, where it stands at 629, the figure for England and Wales being taken as 1000.

Infantile Mortality in England and Wales.

In the year 1910 one-fifth of the total deaths were those of infants who had not attained the age of one year, the corresponding mortality-rate being slightly below the very low rate of 1909, and considerably below that of any preceding year. In each portion of the first year of age the loss of life was the lowest hitherto recorded. Compared with the average in the preceding quinquennium, the mortality in the first three months after birth was lower by 9 per cent., while the corresponding fall at ages 3 to 6 months was no less than 19 per cent., and at ages 6 to 12 months 17 per cent. The mortality at ages above 3 and under 12 months is now hardly more than half what it was ten years ago. From a useful diagram which indicates very clearly the differences in local incidence of infant mortality, we learn that the rates vary widely in different parts of England, and that the variations are not merely casual is shown by the persistency with which they recur year after year. The rates are almost invariably lowest in agricultural districts, and highest in the areas containing mining, textile, and pottery industries. With few exceptions the foreign countries in which a high rate of infantile mortality prevails are those which are remarkable for a high birth-rate. Austria, Hungary, Prussia, and Spain are instances in point, while France forms a noteworthy exception, for in that country the birth-rate is low, whilst the infant mortality rate is comparatively high.

(To be concluded.)

METROPOLITAN ASYLUMS BOARD: DIPLOMA IN PUBLIC HEALTH.—A three months' course of lectures and demonstrations in hospital administration will be given at the following hospitals: Eastern Hospital, Homerton-grove, Homerton, N.E. (Dr. E. W. Goodall, medical superintendent), Tuesdays at 2.30 P.M., and Fridays at 11 A.M., beginning Friday, Oct. 4th. North-Western Hospital, Lawn-road, Hampstead, N.W. (Dr. J. MacCombie, medical superintendent), Mondays at 5 P.M., and Thursdays at 5 P.M., beginning Monday, Oct. 7th. Grove Hospital, Tooting-grove, Tooting Graveney, S.W. (Dr. J. E. Beggs, medical superintendent), Wednesdays at 4 P.M., and Saturdays at 12.15 P.M., beginning Wednesday, Oct. 2nd. The fee for the course is £3 3*s*. Students can join the class at any time provided they complete the course during the class beginning in January, 1913. Medical men desiring to attend a course of instruction are required, before attending at the hospital, to pay the above mentioned fee to the Clerk to the Metropolitan Asylums Board, Embankment, E.C., giving their full name and address.

WEST AFRICAN MEDICAL STAFF.

THE following information has been issued by the Colonial Office, under date July, 1912, for the use of candidates for appointments on the West African Medical Staff :—

1. The medical services of the West African Colonies and Protectorates—namely, the Gambia, Sierra Leone, the Gold Coast (including Ashanti and the Northern Territories), Southern Nigeria, and Northern Nigeria—form one service under the above name. All the medical officers for the service are selected by the Secretary of State for the Colonies, and are on one list for employment and promotion.

Salary and Allowances.

2. The grades and emoluments of officers of the staff are as follows :—

(*a*) *Principal Medical Officer.*—The principal medical officers receive salary as follows :—

In Southern Nigeria £1000 a year, rising by annual increments of £50 to £1200 a year, with a duty allowance[1] at the rate of £200 a year.

In Northern Nigeria and the Gold Coast £1000 a year, without increments, but with a duty allowance at the rate of £200 a year.

In Sierra Leone £800 a year, rising by annual increments of £50 to £1000 a year, with a duty allowance at the rate of £160 a year.

There is no principal medical officer in the Gambia.

(*b*) *Deputy Principal Medical Officer.*—There are three appointments of this grade, in Northern Nigeria, Southern Nigeria, and the Gold Coast respectively. Salary at the rate of £800 a year, rising by annual increments of £25 to £900 a year, is attached to these appointments, together with a duty allowance at the rate of £160 a year.

(*c*) *Senior Sanitary Officer.*—There are four appointments of this grade, one each for Northern Nigeria, Southern Nigeria, and the Gold Coast, and one for Sierra Leone and the Gambia. Salary at the rate of £800 a year, rising by annual increments of £25 to £900 a year, is attached to these appointments, together with a duty allowance at the rate of £160 a year.

(*d*) *Provincial Medical Officer.*—There are four appointments bearing this title, two in Southern Nigeria and two in the Gold Coast, with salary at the rate of £700 a year, rising by annual increments of £25 to £800 a year, and duty allowance at the rate of £140 a year.

(*e*) *Senior Medical Officer.*—There are 11 appointments of this grade, with salary at the rate of £600 a year, rising by annual increments of £25 to £700 a year, and a duty allowance at the rate of £120 a year.

(*f*) *Junior Sanitary Officer.*—There are four appointments of this grade, with salary at the rate of £600 a year, rising by annual increments of £25 to £700 a year, and a duty allowance at the rate of £120 a year.

(*g*) *Medical Officer.*—The salary attached to this grade is at the rate of £400 a year, rising by annual increments of £20 to £500 a year. There is no duty allowance. Medical officers who have served for five years and are recommended for a higher rate of salary are required to take a special course of study for three months. If they obtain satisfactory certificates at the end of the course they are placed, on completing six years' service, on a scale of salary at the rate of £525 a year, rising by annual increments of £25 to £600 a year.

3. Certain allowances not mentioned in the preceding paragraphs are also drawn by members of the staff. These are as follows :—

(*a*) When the principal medical officer certifies that it is necessary for a medical officer to keep some means of conveyance (e.g., a hammock, horse, or bicycle) to enable him efficiently to perform his official duties, the medical officer will, if the Governor approves, be granted an allowance, in accordance with the general local regulations on the subject, for the maintenance of the conveyance. In some cases, when hammock-carriers are supplied free by the Government, no allowance is given for the maintenance of a hammock.

(*b*) *Transport of stores.*—The Government carries free of cost a reasonable amount of stores for every medical officer, the amount in each case being fixed by the local Government.

(*c*) *Travelling.*—Government officers in Sierra Leone, the Gold Coast, and Southern Nigeria receive, when travelling on duty away from their stations, free transport and travelling (or "bush") allowance, in accordance with the local regulations for the time being in force. In the Gambia the travelling allowance is fixed at a rate intended to include the cost of transport. In Northern Nigeria free transport is provided, but there is no travelling allowance.

(*d*) *Allowances on a military expedition.*—All medical officers, whatever their rank, while employed with a military expedition, will be paid an allowance of 10s. a day; and they will also be given free rations, or an allowance of 3s. a day in lieu of rations, whenever other officers employed with the expedition are given free rations or an allowance in lieu of rations. While in receipt of these allowances, medical officers will not be entitled to any repayment or allowance under (*c*).

(*e*) *Outfit allowance.*—An allowance of £12 is paid to every medical officer before his departure on first appointment towards the purchase of camp outfit (see under "Outfit").

(*f*) Medical officers are also paid a fee of 6d. for each successful vaccination performed by them.

Leave of Absence, Passages, &c.

4. Medical officers are in general subject to the Colonial Regulations in force for the time being, Chapter II., § 10 of which contains the rules specially applicable to West Africa. A brief summary of these rules is given here for convenience.

5. The ordinary tour of residential service is one year, followed by leave with full pay during the voyages to and from England, and for four or two months clear in England, according as the officer is returning for further service in West Africa or not. If an officer is detained beyond the year, additional leave is given with full pay for ten days in respect of each completed month beyond twelve, whether he is returning or not. If he is invalided before the end of the year, the leave with full pay is for the voyages and for ten or five days in respect of each completed month, according as he is returning or not. Leave granted on the understanding that an officer will return is known as "return leave," and any pay drawn in respect of such leave is liable to be refunded if he does not return.

6. Medical officers desiring an extension of ordinary leave of absence for purposes of study may be granted such extensions with half salary on the recommendation of the Governor, to whom application must be made through the principal medical officer prior to the officer's departure from the colony. Unless this procedure is followed, any extension for the purposes of study which may be granted will, except in very special circumstances, be without salary.

7. Leave may be extended with half pay for a period not exceeding four months on the ground of ill health, or without pay on that or other grounds.

8. Free passages are given to all officers who are granted leave as above. A free passage is also given on first appointment, subject to the officer signing an agreement under which he is liable to refund its cost if he relinquishes his appointment for any other reason than physical or mental infirmity, or is removed for misconduct, within three years from the date of his arrival in West Africa.

9. Half pay is given during the voyage out on first appointment.

10. Fuller information on these points will be found in the Colonial Regulations, which may be obtained, price 1s., through any bookseller, or may be consulted on application at the Colonial Office, and a copy of Chapter II., § 10 may also be obtained free on application to the Colonial Office. A copy of the Regulations is communicated to each officer on his selection for appointment.

General Conditions of Engagement.

11. The general conditions of service for civil servants in the West African Colonies and Protectorates are set out in African (West) No. 750, a copy of which can be obtained at the Colonial Office.

12. The period of probation for medical officers is one year instead of the three years usual in other cases.

Private Practice.

13. All officers of the staff, except principal medical officers, deputy principal medical officers, provincial medical officers, sanitary officers, and a few other officers holding special appointments, are allowed to take private practice, provided that it does not interfere with the faithful and efficient performance of their official duties, but it is within the power of the Governor to withdraw or suspend the privilege in such places and for such periods as he may consider desirable.

Private practice does not exist at the majority of stations, and no guarantee can be given that an officer will be posted to a station in which he will be able to practise privately. As a general rule, and subject to the exigencies of the service, stations where there is private practice are allocated to senior members of the staff.

Outfit.

14. *Instruments and drugs* and all medical appliances (including microscopes, when necessary) are supplied by the Government for all public purposes. Drugs required for private practice should be imported by medical officers themselves or obtained on payment from the medical stores with the sanction of the principal medical officer. Instruments and medical appliances supplied by the Government may be used in private practice.

15. *Camp outfit* must be taken out by every medical officer, and an allowance of £12 is given towards its purchase.

Information as to outfit is contained in the West African Pocket Book, a copy of which is given to every officer selected for an appointment in the West African Medical Staff.

Uniform.

16. In Northern and Southern Nigeria there is a field-dress prescribed for medical officers in common with other civil officers, particulars of which will be found in the West African Pocket Book. In the other colonies there is a similar field-dress which any medical officer may wear if he wishes to do so, and which the Governor may order to be worn by any medical officer if he considers this desirable.

Quarters.

17. At all the recognised stations single quarters, free of rent (but not of rates and similar outgoings), are provided for medical officers, or an allowance is paid in lieu of quarters. Information as to the nature of the quarters, the amount of furniture supplied, &c., will be found in the West African Pocket Book.

Pensions and Gratuities.

18. The ordinary regulations relating to pensions and gratuities for West African service can be consulted at the Colonial Office, but for convenience a brief though necessarily incomplete account of them is given here.

19. On attaining the age of 50 years, or after 18 years' service (of which at least 12 must have been residential), an officer is qualified for a pension calculated at 1/40th of the last annual salary for each year of service. If invalided after a minimum of seven years' service he is qualified for a pension calculated at the same rate.

20. If invalided before completing seven years' service he is qualified for a gratuity not exceeding three-quarters of a month's salary for each six months of service, provided that he has been confirmed in his appointment.

21. For the purpose of calculating the amount of these pensions and gratuities, leave of absence without salary is not counted, while leave with half salary is counted half.

22. In addition to the ordinary regulations, an officer of the West African Medical Staff enjoys the following special privilege. At the end of nine years (of which not less than six must have been residential) he will be permitted to retire with a gratuity of £1000, or at the end of 12 years (of which not less than eight must have been residential) with a gratuity of £1250. All claims to pension are, however, forfeited on the receipt of such a gratuity.

Applications for Appointments.

23. Applicants for appointment as medical officers in the West African Medical Staff (the higher grades will usually be filled by promotion from the lower) must be British subjects of European parentage, and between 23 and 35 years of age; preference is given to candidates who are over 25 years of age. Applicants must possess a complete double qualification, and must be on the Medical Register.

24. Preference will be given to unmarried candidates. Married ones

[1] A duty allowance is payable to the holder of the appointment to which it is attached only while he is actually performing its duties, and during his absence or incapacity it is paid, at the discretion of the Governor, to the officer performing them for the time being. A duty allowance is not a pensionable emolument.

are not excluded; but it should be remembered that passages for wives and children are not provided by the Government, and that houses for them are rarely available. Officers should not take their wives out with them until they have acquired experience of the local conditions, and have obtained the sanction of the Governor.

25. Candidates should apply in writing to the Assistant Private Secretary, Colonial Office, Downing-street, S.W., by whom forms will be supplied, which the candidate must fill up with full particulars regarding his career and qualifications, and the nature of the appointment he desires; he must name on the form two referees who will answer from personal knowledge for his character and capacity, and he must return it to the Assistant Private Secretary with originals and copies of testimonials (not more than six), which should be sent in all together. The originals will be inspected and returned to the candidate, and the copies retained for record in the Colonial Office. He should also enclose a certificate of birth, which will be returned to him.

26. If from his application he appears to be *primâ facie* eligible for appointment, the candidate will be asked to attend at the Colonial Office for an interview with the Colonial Medical Appointments Committee, which meets about once a month to advise the Secretary of State as to the suitability of candidates. If the candidate is considered suitable his name will be noted on the Secretary of State's list, and will then be considered with those of other candidates as vacancies from time to time occur; but no promise whatever can in any case be given that a candidate, even if placed on the list, will eventually be offered an appointment. If a candidate is offered an appointment, he can usually be allowed sufficient time to make preparations and to terminate the employment in which he may be engaged, and it is accordingly not expected that candidates should hold themselves in readiness by retraining from other employment.

27. The selection of candidates depends on the general educational attainments, the professional training and experience, and on the character and personal fitness of the applicants. These qualifications are judged by the candidate's academic and professional record, by testimonials from properly qualified persons who have a personal knowledge of the candidate and his career, and by the personal interview at the Colonial Office.

Attempts to influence the Secretary of State's selection through Members of Parliament or other persons who are not personally well acquainted with the applicant are useless, and will be regarded as indicating that the applicant himself does not consider his qualifications sufficiently good to justify his appointment on his own merits.

28. Candidates whom it is proposed to select for appointment will have to be medically examined by one of the medical advisers of the Colonial Office (or in the case of those residing in a colony by a medical officer appointed by the Colonial Government), and no appointment will be made unless the candidate is declared to be physically fit for service in West Africa.

29. Candidates for medical appointments in West Africa are allowed to express a preference for any particular Colony or Protectorate, and their wishes in this respect will be borne in mind and met as far as possible, but they are liable to be posted in the first instance, or transferred afterwards if necessary to any other West African Colony or Protectorate at the discretion of the Secretary of State.[2]

30. Transfers from one Colony or Protectorate to another will, however, be made as seldom as possible, and will usually be restricted to the following cases:—

(i.) If an officer is appointed in the first instance as supernumerary to the establishment in one Colony, or Protectorate, pending the occurrence of a vacancy in another Colony or Protectorate.
(ii.) If an officer himself applies for transfer in the same grade.
(iii.) On promotion.
(iv.) Temporary transfers in cases of emergency.

31. Candidates should on no account apply for, or accept, a West African appointment in the expectation of ultimately being transferred elsewhere, as the number of opportunities for such transfers is exceedingly small. No applications for transfer can be entertained until an officer has served for five years in West Africa, and officers desiring to be transferred must be prepared to find that medical salaries in other colonies are lower than in East or West Africa. Only a small proportion even of applicants who satisfy these conditions succeed in obtaining a transfer.

32. Officers of the West African Medical Staff who may be transferred to pensionable appointments under the Crown elsewhere than in West Africa do not forfeit their claim to pension in respect of their West African service on final retirement, provided that they have been members of the staff for at least 12 months.

Instruction in Tropical Medicine.

33. Every candidate selected for appointment will, unless the Secretary of State decides otherwise, be required to undergo a course of instruction for two or three months either at the London School of Tropical Medicine, Royal Victoria and Albert Docks, E. (near Connaught-road Station), or at the Liverpool School of Tropical Medicine at University College, Liverpool. The cost of the tuition fees, board, and residence during such instruction, amounting to a maximum of £48 8s. 10d., for three months, will be borne by the Government in the case of the London School; at Liverpool the cost of tuition will be borne by the Government, but candidates must make their own arrangements for board and lodging; an allowance of £2 a week will be paid to them monthly in arrear for this purpose. A daily allowance of 5s. (but no salary) will be paid to each candidate, monthly in arrear, during the course, and may be continued subsequently up to the date of embarkation. These payments will be made subject to the candidate signing an agreement by which he will be bound to refund them (1) if he declines to accept an appointment in any of the Colonies or Protectorates for which he may be selected by the Secretary of State, (2) if he fails to obtain the certificate referred to in the next paragraph, or (3) if he relinquishes the West African service for any other reason than mental or physical infirmity, or is removed for misconduct, within three years of the date of his arrival in West Africa.

34. Every candidate sent to either of the schools is required to obtain a certificate showing that he has satisfied the school authorities with regard to his regularity of attendance, progress, and proficiency, and for this purpose to undergo any examinations which they may consider necessary; and if he fails to obtain such a certificate he may not only be called upon to refund the payments made to him or on his behalf (as provided in the previous paragraph), but his selection for the West African Medical Staff may also be cancelled.

35. If at the end of the session there exist no vacancy in the staff to which a candidate can be appointed, he will be placed in a Reserve and granted an allowance at the rate of £200 a year until the occurrence of a vacancy. The payment of this allowance will commence on the day following the last day of his attendance at the School of Tropical Medicine (which is stated in the certificate furnished by the school authorities), and will be continued until he commences to receive half salary on the day of his embarkation for West Africa.

36. The date of embarkation for West Africa is the date from which appointment to the West African Medical Staff takes effect, and medical officers cannot count the period of detention in England in the Reserve towards service for pension or seniority in the staff. Seniority alone, moreover, does not give any claim to promotion.

37. Reserve officers will be required to embark within a fortnight after the receipt of a notification from the Colonial Office that a vacancy has occurred to which they have been appointed.

38. In the case of candidates who are appointed to vacancies immediately on the conclusion of the school session, the daily allowance (see para. 33) of 5s. is continued up to the day before embarkation, provided that they embark not later than a fortnight after the end of the session. Half salary in such cases begins on the day of embarkation.

39. If a medical officer has for any reason not taken a course of instruction prior to appointment, he is required to take it during his first leave of absence, and to obtain the certificate before he can be confirmed in his appointment. In this case the tuition fees will be paid by the Government and he will be allowed his railway fare from his place of residence to the school at the commencement of the course, and back again on its conclusion, together with an allowance of 2s. 6d. towards his lodging expenses if he requires to sleep away from his place of residence in order to take the course. But no further allowance in respect of board or residence, nor any other daily allowance, will be given in addition to pay. The officer's leave of absence may, however, be extended with half salary so as to give him a total of five months in England.

Higher Scale of Salary.

40. The regulations in regard to the special course of study referred to in para. 2 (*g*) of this pamphlet are as follows:—

The approved course of study is the three months' course of the West London Post-graduate College or the London School of Clinical Medicine, Greenwich, in clinical medicine, clinical surgery, and pathology.

Officers are allowed to substitute for this course either—

(i.) The course of study and examination for a recognised diploma or degree in public health, sanitary science or State medicine; or
(ii.) The course of study and examination for a further medical or surgical diploma or degree; or
(iii.)—If the Governor, on the recommendation of the principal medical officer, approves—A course of study in some special branch of medical or surgical practice (e.g., ophthalmology, dermatology, genito-urinary diseases), or an advanced course at the London or Liverpool School of Tropical Medicine.

41. Whichever of these courses of study is selected, the necessary tuition and examination fees will be paid by the Colonial Government, except in the event of an officer's deciding to enter for a further medical or surgical diploma or degree, in which case no fees will be paid. In all cases, including the last-named, officers will be allowed their railway fares and the lodging allowance specified in para. 39, on the conditions set forth in that paragraph, and their leave of absence may be extended as therein provided. The payment of fees, allowances, and railway fares in connexion with the course of study and examination for a diploma in public health, &c., is conditional on the officer's undertaking to refund the sum paid, in the event of his failing to obtain the diploma, or relinquishing the West African service (for any other reason than mental or physical infirmity) without completing two full tours after obtaining it.

[2] Officers serving in Southern and Northern Nigeria will be liable to transfer to any part of Nigeria at the discretion of the Governor pending and after the amalgamation of the two dependencies, which is in contemplation.

THE BRITISH MEDICAL MAN ABROAD.

(*Concluded from p. 665.*)

DENMARK.

IN Denmark only those who have passed the Danish Medical Examination are entitled to practise. In Iceland it suffices to have been examined at the Medical School in Reykjavik. The medical student before beginning his studies must present a diploma of *Examen artium*—an examination very similar to the German *Abiturienten-examen*. At the close of the first year he must pass an *Examen philosophicum*. The medical studies proper require from six to seven years. The foreign student will find one agreeable difference from what is customary in other countries—namely, that all University lectures and clinical courses are free, payment of class fees being unknown, but a few pounds are required for the examination. On passing the examination the young man becomes entitled to practise, and not a few commence at once. The majority, however, prolong their practical training by accepting an appointment as (salaried) junior house physician or house surgeon in one of the numerous hospitals of the country. The most highly valued appointments—namely, those at the Kommune hospital or at the State Hospital of Copenhagen—were, however, formerly in so great demand that not rarely four, five, or

even more years elapsed before an aspirant could secure the coveted position, when he served for one or two years in the different departments of the hospital. This unreasonably long waiting time is now considerably reduced, as the Association of Junior Medical Men has arranged with the faculty and other authorities for the establishment of a larger number of appointments, which are to be officially considered as equivalent to the older appointments at the two hospitals.

The only academical degree for medical men known in Denmark is the degree of M.D. It is granted exclusively by the University of Copenhagen, and only to those who have submitted to the faculty an original investigation of undoubted scientific value, the consequence being that only a comparatively small number of Danish practitioners possess the degree in contradistinction to what is customary, for example, in Germany. In fact, the Danish degree of M.D. must be considered as equal to the German title of *Privatdocent* or the French title of *professeur agrégé*, as it authorises its possessor to teach publicly in the university.

The only portion of Danish territory where a foreign medical man is permitted to make use of his diploma are the Danish islands in the West Indies, the Governor being empowered to grant such permissions; but he is not likely to do so except during epidemics or when other abnormal conditions obtain.

SCANDINAVIA.

As a general rule no one can legally practise medicine in Scandinavia without passing the examinations of the respective countries. Certain exceptions have, however, from time to time been made in favour of practitioners with foreign degrees who may wish to practise without passing the examinations of the country. An interesting account of the conditions of medical practice in Scandinavia and the evolution of medicine there will be found in THE LANCET, Vol. II., 1911, pages 36, 114, and 244 respectively.

BELGIUM.

According to an Act of August 1st, 1891, the possessor of a diploma as a registered practitioner of medicine or pharmacy obtained outside Belgium who wishes to practise his profession in Belgium must petition the Minister of Agriculture, Industry, and Public Works for a licence to practise as a medical man. The following documents must accompany the petition: the final diploma testifying that the practitioner has obtained the degree of doctor; a licence to practise if such is required in the land of origin; a certificate of the authorities of the foreign government showing that the aforesaid documents confer the right to practise throughout the country. The candidate must prove by these documents his right to practise medicine, surgery, and midwifery in the country where he is licensed. These documents must first be legalised by the petitioner through the Belgium Diplomatic Agent of the Government which has conferred his diploma. On receipt of this petition the department investigates the character of the petitioner, and if necessary the reason of his desire to dwell in Belgium. After this inquiry the Belgium Minister of the Interior, on receiving from the Minister of Agriculture, Industry, and Public Works the verified application from his department, hands the petition with the appended documents to the Central Jury appointed by the Government. This Jury decides whether, according to their form and the rights which they legally confer, the documents can be considered as regular and sufficient to justify the title of doctor; whether the petitioner received his instruction in a fully organised superior school; and compares especially, (1) duration of the entire period of study of medicine or pharmacy in Belgium with that in the foreign school in question; (2) the curriculum of the studies with respect to their equivalent states from a scientific standpoint; (3) the character of the tests to which the applicant has been submitted. The Jury may for this purpose require from the petitioner either in person or by letter any explanations they may deem useful. They may also demand certified translation of the foreign documents. After this investigation the Jury decides the subjects of the examination which the candidate must undergo. The President of the Central Jury immediately communicates this decision to the candidate by letter. He informs him at the same time that he can enter himself for examination at the current session or at some future period. The examinations are subject to the usual conditions required by the Belgium law. After the examination the jury is advised of the decision to be sent to the Government. The decision of the jury relating to the practice of medicine decides whether the examinee possesses special scientific conditions and whether on account of that the Registrar can give permission to practise; the conclusions of the board are made effective by protocol. An extract from this protocol is to be sent to the Belgium Minister for Internal Affairs and Public Instruction. Before the examination the applicant must pay the required fees, between £4 and £5.

NETHERLANDS.

A medical practitioner holding British qualifications cannot practise in the Netherlands without being also qualified in the Netherlands. For this purpose it is necessary to pass the medical examinations of one of the universities. The examinations are in the Dutch language. There is no fee to be paid.

SWITZERLAND.

Foreign practitioners must pass the first, third, and fourth State Examinations. These examinations are held in either French (at Lausanne and Geneva) or German (at Berne, Basle, and Zürich). In addition to the British five years' curriculum practitioners would require one or two years' additional study. The examination fees amount to about £9.

SPAIN.

To practise in Spain it is necessary for the holder of British qualifications to apply to the Royal Council of Public Instruction and Fine Arts and enclose the degrees, diplomas, or similar credentials which he possesses, and request permission to appear before an examining body. The above documents must be translated by the Interpretation Bureau of the Ministry of State and afterwards presented in the Ministry of Public Instruction, together with a petition to the Minister, clearly stating the applicant's requirements. We are informed that the examination which confers a licence to practise consists of three parts: 1. A written examination lasting two hours. 2. A *viva-voce* examination. 3. Clinical examination of a patient and a report upon his condition. The fee for the examination is 40 pesetas (£1 12*s.*). The fee for the diploma is 814.50 pesetas (£32). The length of time between the presentation of the documents to the Ministry of State and Public Instruction and the granting of the diploma is variable on account of the time occupied in the necessary legal formalities. The expenses of translation of the documents likewise vary with their length and the consequent work entailed to be done by the Bureau.

PORTUGAL.

Holders of British diplomas who wish to practise in Portugal possess no advantage by reason of the possession of those diplomas. They must apply for examination at the Schools of Lisbon or Oporto or the Faculty of Coimbra. For the last examination the presentation of a *printed* dissertation is required.

GREECE.

In Greece the foreign qualifications which entitles to practise legally is the possession of a degree or diploma from a recognised university or corporation of a state where practical examinations in Pharmacology, Surgery, Obstetrics, and Forensic Medicine are demanded, which means that registered British practitioners by supplying documentary proof to the medical secretary of the Ministry of the Interior in Athens can obtain the right to practise. All persons possessing no qualifications outside Greece have to submit to the practical examinations of which the doctors of medicine in the university are subject, but if ignorant of Greek examination can be taken in French, German, or Italian. There is no entrance fee, but there is an annual fee or tax dependent upon the amount of practice.

TURKEY.

Every foreign medical practitioner desirous of settling in Turkey for the purpose of practising his profession must undergo the ordeal of the so-called "colloquium." This is a sort of professional examination very easy in itself but a source of annoyance and vexation to Europeans by the dilatory propensities of Orientals and their habit of conducting business in an indolent and easy-going way. This, however, has somewhat improved of late. The "colloquium" itself takes about half an hour's time,

whereas the preliminary steps and arrangements and the subsequent formalities necessary for the final obtainment of the medical permit lasts for weeks and even months. The "colloquium" must at the present time be passed either in French or Turkish without any interpreter, the choice of the language being left to the examinee. The possessor of a foreign diploma is tested, as a rule, in four subjects; and the testing consists in three or four questions in each subject, which the candidate has to answer orally. It rarely happens that a European physician fails to pass the "colloquium." The fee for it used to be about £8. Two or three years ago it was raised to about £20. We are informed that this was done in order to increase the revenue of the rather inefficiently equipped Medical School at Haidar Pasha and to diminish the influx of the numerous medical men flocking to the Turkish metropolis from almost every country adjoining the Ottoman Empire. A far better means of effectively doing the latter would be to raise the rather low standard of the "colloquium." There are numbers of medical men in Constantinople and in other parts of Turkey whose qualification is doubtful. This is especially the case with regard to the so-called "surgical dentists." With the new *régime* of the free constitutional government new alterations and improvements will undoubtedly be introduced into the rules regulating the practice of foreign medical men. The Young Turkish Parliament has lately already touched upon some important medical questions, such as the service of non-Mussulman practitioners in the Ottoman army. We learn that strict measures will be taken against all those who do not possess necessary qualifications, that the standard of the medical curriculum will be raised, and that the manner of conducting the "colloquium," as well as its character, will be completely changed.

It was believed that with the advent of the constitutional *régime* women doctors, so very much needed in the Ottoman Empire, would also be admitted to the "colloquium" and have the right to practise. But a number of female practitioners from Russia had to leave soon. They were told that no foreign lady would be admitted to any examination and that the right of practising in Turkey is strictly reserved to native women, who must be Ottoman subjects. They were also informed that the medical profession in the metropolis is overcrowded and that it would not be fair to increase foreign elements at the expense of the natives.

RUSSIA.

As a general rule those who wish to legally practise medicine in Russia must pass a State examination, but exceptions have been made, though encouragement is not usually given to foreigners. No one, whether a Russian subject or a foreigner, who has not a diploma or certificate from a Russian university or from an Army Medical Academy, has the right to follow any branch of medical or veterinary practice in Russia; and foreign medical practitioners who wish to practise medicine in Russia must, without exception, know the Russian language. The right to decide what foreign practitioners shall be permitted to practise in Russia and under what conditions is in the hands of the Medical Council of the Ministry of the Interior: some are permitted only after the usual examinations and consequent granting to them of a degree; others who are well introduced after an oral examination; lastly, others who have made a name in the scientific world by their writings or unusually successful practice, or who have occupied professorial chairs or other important medical appointments in other countries, may be permitted to practise without any examination, solely on the decision of the Medical Council, confirmed by the Minister of the Interior, to which body application for permission to be examined must be made. As to the prospects of a British practitioner in Russia, the country and the smaller towns can present no attraction to an English medical man, even if the fees obtainable would support him, which they would not. In the two capitals, Moscow and St. Petersburg, the field is wider. Competition is, however, great, fees are as a rule small, and bad debts many. The frequency of bad debts results from the unwritten law by which medical men do not send in accounts, but leave the patient to pay what he considers a suitable amount.

EGYPT.

Any person in possession of a diploma from a recognised school of medicine is allowed to practise his profession in Egypt after having presented his diploma to the Director-General of the Sanitary Department at Cairo for verification, and paid a small fee of 6 piastres. From a recent report of the department it appears that the influx of medical men into Egypt of late years has been very great, so that it is difficult to understand how some are able to gain a livelihood from their profession. The effective control of diplomas which emanate from so many different foreign schools must be at times somewhat difficult, for the Public Health Department has no means of identifying the person who presents the diploma as the person who underwent the examinations which entitled him to it—e.g., there is nothing to prevent a person who has come into possession of a diploma by fraudulent means personifying the legitimate owner of the diploma and obtaining a licence to practise. It is true that in addition to the diploma a certificate of good conduct is necessary from the applicant's Consul before a licence to practise is granted, but in many cases the Consul finds himself in the same difficulty as the department with regard to ascertaining if the person in possession of the diploma is the rightful owner or not. We recommend any one of our readers who is attracted by the idea of medical practice in Egypt to obtain introductions to a resident in Egypt, so that he may ascertain the chances of finding a remunerative opening and be provided with a witness to his identity. A knowledge of French or Italian and Arabic would be essential to any newcomer desirous of practising all the year round, for the tourist season only last from November to April.

JAPAN.

According to the regulations for medical licence, "persons holding either diplomas of foreign universities, or medical schools, or foreign licences for practising medicine may be granted licences for practising medicine in Japan, without being subject to the usual medical examination, upon producing such diplomas or licences obtained in foreign countries to the satisfaction of the home authorities." English medical practitioners will therefore have no difficulty in obtaining a licence in Japan. A local rate, which would be a small fee only, may have to be paid on opening a practice, but no charge is made for the right to practise. We have been informed that English practitioners in the foreign quarters of Japan are at some disadvantage for the reasons that the druggists, who are now nearly all Japanese, sell their drugs at a cheaper rate to native practitioners; and, moreover, living is cheaper for the native than for the foreigner. Foreign practitioners depend largely upon shipping and contract business work.

SOUTH AMERICA.

Argentine.—A foreign practitioner is required to take the same course as the Argentine medical student, which includes some 30 examinations held in the Spanish language. No exemption can be obtained, although the examinations may be compressed into a shorter space of time than the regulation seven years. The fee for examination is prohibitively high, and there is an annual fee of about £8 15*s*. In view of the increasing numbers of native practitioners, it is unlikely that the demands made upon foreign medical men will diminish in the future.

Brazil.—Here the difficulties put in the way of practice by foreign medical men are if anything greater than those existing in the Argentine. The foreigner must submit himself to an examination in the subjects of the whole curriculum of medicine and surgery in the Faculty of Medicine and to an examination in the clinics of the Misericordiæ Hospital, where the practical courses are held. The examinations are divided into two parts, the first consisting of descriptive anatomy, microscopical anatomy, physiology (first and second part), and microbiology. The second part consists of pharmacology, pathological and histological anatomy, topographical anatomy—bandaging and operations—general pathology, therapeutics, hygiene, legal medicine, internal clinical medicine and pathology, external clinical surgery and pathology, clinical midwifery, psychology, and nervous diseases. In addition to these subjects there is also an examination in ophthalmology, otology, rhinology and laryngology, syphilis and skin diseases, diseases of children, surgical pædiatrics and orthopædics, and gynæcology. Of these special subjects the candidate selects any two only for examination. The applicant must first present his diploma to the Director of

the Faculty of Medicine franked by the Brazilian Consul in the country from which the applicant comes, and the attestation seal has to be verified at the Brazilian Ministry for Foreign Affairs. For the first examination the fee is about £6 10s. or £7; for the second examination about £10. The examinations are conducted in Portuguese and an interpreter is not permitted. Application for the next examination must be made between Nov. 15th and 25th, the examination being held on Dec. 1st. A medical man who has held the appointment of professor at a foreign medical school can practise without passing an examination, and also those who, in the opinion of the Director of the Public Health Service, have written important medical works. Application should be made to Directoria General de Suade Publica, Rio de Janiero, Brazil.

UNITED STATES OF AMERICA.

The laws regulating the practice of medicine in the various States and territories of the United States of America differ to a considerable extent in detail. In spirit, however, they are beginning to assume that uniformity which all medical reformers must desire for them. The progress of the United States is in no way better shown than in the fact that throughout its vast length and breadth there is now an attempt to secure for the people of the country adequate medical treatment based on scientific grounds. A *résumé* of the legal regulations for medical practice in the States and territories of the United States of America can be secured by sending 30 cents to the American Medical Association, 535, Dearborn-avenue, Chicago, Illinois. In this digest of the medical laws of the various States, which has been brought quite recently up to date, existing legislation is explained on broad grounds so far as it pertains to medical practice. If the information with regard to some particular State is anywhere scanty in detail it is always possible for the intending practitioner to communicate with the secretary or executive officer of the medical board at the capital of the State.

We must continue to warn the British medical man desiring to practise his profession in the United States of America that in all the more enviable centres he will find a vast number, almost a plethora, of medical men, the great proportion of whom have been thoroughly well educated and trained. He must remember also that in the more important States, generally speaking, although the remuneration may rule high, the expense of living is proportionate. He will understand that the less highly the State is developed the more easy will it be for him to obtain a footing, but the less pleasant in all probability will be his professional career. Examinations are now required of all applicants in all States.

CANADA.

The possession of British diplomas and degrees will in many cases entitle the holders to practise in Canada after having obtained a licence from the provincial medical boards and paid certain fees. It is hoped that a general principle of reciprocity will soon prevail.

Ontario.—Registration by the Council of the College of Physicians and Surgeons of Ontario is necessary, and it is optional for the Council to admit to registration all persons who are duly authorised to practise medicine, surgery, and midwifery in the United Kingdom and Ireland upon terms which the Council may deem expedient. The British medical man desiring to practise in Ontario should make full inquiries and ascertain his exact position beforehand, or he may be sadly disappointed.

Quebec.—Practitioners must be licensed and registered by the Provincial Board, which may license without examination holders of medical qualifications from British universities or corporations.

New Brunswick.—Practitioners in New Brunswick must be registered by the Medical Council of the province. A candidate for registration (1) must pass an examination in English, arithmetic, algebra, geometry, Latin, elementary mechanics, elementary chemistry, history, geography, and two of the following languages, Greek, French, and German, unless he has already matriculated at some college in the United Kingdom, Canada, United States of America, or Europe, or holds a first-class teacher's licence from the Board of Education of New Brunswick; (2) he must afterwards have studied for four years and attended some university or college or school of medicine for four sessions of not less than six months each and have attended lectures on anatomy, pharmacy, &c.; (3) he must have attended the general practice of a hospital for 12 months; (4) he must have obtained a degree in the above subjects from a university, college, or school requiring such four years' course of study, or must have passed an examination in them before the examiners in New Brunswick; and (5) he must be over 21 years of age. Every candidate for registration as a practitioner, whether or not he has a degree or diploma, must pass an examination. A fee of $10 is required, and medical practitioners are liable to an annual fee of from $1.

Nova Scotia.—Registration and a licence from the Provincial Medical Board are required, which admits to the privileges of practice, upon payment of the registration fee, all persons who are duly registered by the General Medical Council of Great Britain. The fee is $30.

Prince Edward Island.—No one can practise medicine, surgery, or midwifery in Prince Edward Island unless registered or licensed by the Council of the Medical Society of Prince Edward Island. The Council admits to the register any person who is duly registered by the General Medical Council of Great Britain.

British Columbia.—No person may practise medicine, surgery, or midwifery in British Columbia unless registered by the College of Physicians and Surgeons of British Columbia. The Council admits to the register any person "who shall produce from any college or school of medicine and surgery, requiring a four years' course of study, a diploma of qualification," on proof of identification and on passing an examination as to his competency. The fee for registration appears to be rather indefinite, as we learn that it "must not exceed $100." Licences to practise are issued to women.

Manitoba.—Registration by the Council of the College of Physicians and Surgeons of Manitoba is necessary, and applicants for registration must be members of an incorporated medical body in Canada giving similar privileges to persons incorporated in Manitoba. Application should be made to the Council by British medical men desiring to practise in the province. The fee is $75. Licences to practise are issued to women upon the same terms as men.

Alberta.—Medical practitioners must be registered by the Council of the "College of Physicians and Surgeons of the Province of Alberta." The Council admits to the register anyone who (1) produces a diploma of qualification from any college or school of medicine and surgery which exacts for such diplomas attendance on at least a four years' course of lectures of at least six months each; (2) gives proof of identification; (3) passes before them a satisfactory examination appertaining to the profession of medicine and his fitness and capacity to practise medicine, surgery, and midwifery; and (4) pays $50, and another $50 for registration.

Saskatchewan.—No one may practise in Saskatchewan unless registered (fee $50) by the Council of the "College of Physicians and Surgeons of the Province of Saskatchewan." The Council admits to the register anyone who produces a diploma of qualification from any college or school of medicine and surgery recognised by the Council, which requires attendance at a four years' course of lectures, and who passes an examination (fee $50) before the Council.

Yukon Territory.—Persons on the Register in Great Britain and Ireland, or in any British Colony, are entitled to be registered on payment of a fee of $100.

AUSTRALIA.

Legally qualified British medical men can practise in all parts of Australia. Proof of registration by the General Medical Council of Great Britain must be submitted to the medical board of the particular State selected when a certificate to practise is granted. The medical man with British qualifications who desires to practise in Australia must communicate with the medical board as soon as he intends to settle, so that he may regularise his position from the beginning.

NEW ZEALAND.

Registration in the colony of New Zealand is obtained by the legally qualified British practitioner on producing his proof of registration by the General Medical Council of Great Britain and on paying a fee of £1 5s.

BRITISH SOUTH AFRICA.

The position of the legally qualified British practitioner in South Africa is much the same whichever colony he proposes to practise in.

Cape Colony.—No person may practise in Cape Colony as a medical practitioner without a licence signed by the Colonial Secretary of the province and the recommendation of the Colonial Medical Council is required. The fee for the licence is £5, and women are eligible for the licence. Applications should be made to the Colonial Medical Council at Cape Town.

Natal.—Here also application for a licence to practise medicine in the colony must be made to the Colonial Secretary of the province. The application will be granted upon the approval of the Natal Medical Council.

Southern Rhodesia.—The admission fee for the practice of medicine in Rhodesia is £5, and application for the licence should be made to the Chief Secretary, Salisbury, Rhodesia. It would be well also to write to the Secretary of the British South Africa Company, London Wall, E.C. In *North-Western Rhodesia* the fee is also £5.

Transvaal and the Orange River Colony.—The Transvaal Medical Council (Pretoria) and the Medical and Pharmacy Council of the Orange River Colony, Bloemfontein, grant a licence to practise on payment of £10 and £7 10*s.* respectively. Proof of registration by the General Medical Council of Great Britain must be supplied.

THE INTERNATIONAL DENTAL FEDERATION.

THE annual meeting of the International Dental Federation was held in the University of Stockholm on August 28th and 29th, under the presidency of Mr. W. B. Paterson, of London. Delegates numbering over 100 attended. The opening meeting took place in the Aula. The Minister of Education and Professor Leche, representing the University, were present. The President delivered an address which was in the main congratulatory of the attitude taken by the Swedish authorities towards school dental clinics. The Minister and Professor Leche replied.

His Majesty King Gustav received in audience at the Palace a deputation from the Federation consisting of the President; Dr. Schaeffer-Stuckert, general secretary; Dr. William Guy, of Edinburgh, adjoint secretary; Dr. Rosenthal, treasurer; Höfrat Professor Walkhoff, University of Munich, Dr. Brophy, University of Chicago, and Dr. Aguilar, of Madrid, vice-presidents; Dr. Jessen and Mr. Cunningham, of the Hygiene Commission of the Federation; and M. Roy, of the École Dentaire, Paris, assistant secretary. Dr. Förberg, of Stockholm, had the honour of introducing the members of the deputation. The King expressed his interest in the work of the Federation and wished the meeting all success.

During the meeting various papers were read, amongst such being one on Breadstuffs by Professor Lagerheim, of Stockholm University, which was followed by a demonstration of Swedish breads by Dr. Röse. A report on school dentistry in Denmark was given by Professor Christensen, in which he announced that His Majesty the King of Denmark had extended his patronage to the Danish Hygiene Commission, which was affiliated to the Federation.

Mr. Horace Fletcher, an American well known as a publicist in connexion with food reform, gave an appreciation of modern dentistry, and expressed a desire to help forward the work of the Federation in his lectures in the United States by preaching what he ventured to call the gospel of the "clean mouth," and that with the assistance of the cinematograph.

Mr. G. Cunningham, of Cambridge, exhibited for the first time a cinematographic film prepared from actual scenes in the practice of the Cambridge Schools Dental Institute by Messrs. Pathé Frères. With judicious clipping of certain matters of minor importance this film should prove of value to popular lecturers on oral hygiene.

The Federation awarded the Miller prize to Dr. Charles Godon, head of the École Dentaire of Paris, as one who had rendered eminent services in dentistry. The award is biennial, and consists of a gold medal, diploma of honour, and the interest of a fund of £3000 established by the Federation in memory of its late president, Professor Miller, the well-known odontologist of Berlin University.

The social arrangements of the meeting were highly successful except for the out-of-doors excursions, which had to be abandoned through the badness of the weather. The Swedish dental societies and Dr. Förberg, however, made most ample amends for this shortcoming, and the meeting was unanimously voted a success. Next year the Federation meets in America.

ROYAL MEDICAL BENEVOLENT FUND

AT the August meeting 22 cases were considered and grants amounting to £191 made to 19 of the applicants. Appended are particulars of the cases relieved.

Widow, aged 45, of L.R.C.P., L.R.C.S. Edin. Practically unprovided for at husband's recent and sudden death, and hopes to support herself by taking boarders. Three children, aged 17 to 14½. Voted £10.

Widow, aged 57, of M.B. Lond., who was for many years an annuitant of this Fund and of Epsom College. No income; only son unable to help at present. Proposes to maintain herself by receiving paying guests. Voted £10.

Widow, aged 33, of M.R.C.S., L.S.A. Since husband's death about four years ago has supported herself by nursing. Has recently been promised a post as matron at a good school, where her daughter, aged 9, can receive a thorough education for a nominal sum, but requires help for suitable clothing and maintenance meanwhile. Voted £10.

Widow, aged 69, of late M.R.C.S. Has a small pension, but is in bad health, and has recently had heavy and unavoidable expenses. Voted £5.

Widow, aged 57, of M.R.C.S. Is in very feeble health and dependent entirely on a step-brother, whose help is both small and uncertain. Voted £10.

M.B., B.C., aged 35. Has broken down through overwork, and requires a long rest for which his means are quite inadequate. Voted £20.

Daughter, aged 73, of late M.R.C.S. Was well provided for, but lost everything through a defaulting trustee, and is now dependent on a small annuity purchased by friends and an old-age pension of 3*s.* a week. Voted £10.

L.R.C.P. Edin., aged 68. Used to have a good practice, but is now incapacitated by the effects of an accident, and is dependent, with an invalid daughter, on his wife, whose income, including temporary help from a brother, is only about £1 a week. Relieved three times, £54. Voted £18.

Daughter, aged 66, of late M.R.C.P. Lond., F.R.C.S. Health very poor and only income a small pension from a charitable society. Relieved five times, £37. Voted £5.

Daughter, aged 63, of late M.R.C.S. Maintained herself for many years by dispensing, but is now unable to obtain regular work and is practically dependent on a sister who has to earn her living. Relieved six times, £60. Voted £10.

Widow, aged 55, of L.R.C.P. Edin. Since husband's sudden death seven years ago has maintained herself by needlework and occasionally writing for papers. Two daughters, the elder just self-supporting, the younger still at school. Relieved seven times, £72. Voted £10.

Widow, aged 41, of M.B., Ch.B. Edin. Has an income of £15 a year, but is unable to undertake regular employment on account of her mother's ill-health. No children. Relieved once, £5. Voted £5.

Daughter, aged 56, of late M.R.C.S. No income and practically incapacitated by bronchitis and chronic rheumatism. Relieved 10 times, £97. Voted £12.

Widow, aged 42, of M.B., C.M. Aberd. Receives a small salary as housekeeper, but finds it insufficient for the maintenance during the holidays of her two sons, one of whom is at the Bluecoat School. Relieved five times, £46. Voted £12.

Widow, aged 41, of M.R.C.S., L.R.C.P. Since husband's death from plague 14 years ago has been very generously helped by his brother, whose allowance is unavoidably withdrawn for anyhow a few months. Three children, the eldest 19 and the two younger both delicate. Relieved three times, £20. Voted £10.

Widow, aged 78, of L.F.P.S. Glasg. Receives rooms and 10*s.* a week at an almshouse, but is paralysed and consequently obliged to pay for an attendant. Children unable to help. Relieved twice, £17. Voted £5.

Widow, aged 51, of M.B., C.M. Edin. Supplements an income of £20 a year by taking boarders, and has brought up a family of seven children, of whom two are now self-supporting. Relieved 13 times, £150. Voted £12.

Daughter, aged 45, of late M.R.C.S. Is a trained nurse, but is permanently incapacitated as the result of pyæmia; only income a pension of £30 a year from a charitable society. Relieved once, £12. Voted £12.

Daughter, aged 61, of late M.R.C.S. Lent her capital to a friend whose security proved valueless, and is now dependent on a pension of £21 a year recently granted by the Royal United Kingdom Beneficent Association. Relieved eight times, £104. Voted £5.

Contributions may be sent to the honorary treasurer, Dr. Samuel West, 15, Wimpole-street, W.

THE TAUNTON MEDICAL CHARITIES.—As a result of a carnival held at Taunton last month the sum of £210 has been raised for medical charities. Of this sum £120 have been given to the Taunton and Somerset Hospital, £30 to the Taunton Nursing Association, and £10 have been sent to the Bristol Eye Hospital, leaving a sum of £50, which will be kept as a reserve fund.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

County Borough of St. Helens.—For many years St. Helens has been characterised by an excessive rate of mortality from enteric fever. The following figures show for the quinquennia since 1876 the average rate of death per 1000 from this disease in St. Helens and England and Wales:—

	St. Helens.	England and Wales.
1876–80	0·69	0·27
1881–85	0·53	0·21
1886–90	0·55	0·17
1891–95	0·49	0·17
1896–1900 ...	0·39	0·17
1901–05	0·21	0·12
1906–10	0·13	0·07

Although the rates for St. Helens are always higher than those for England and Wales, it is satisfactory to observe that the decline of enteric fever has been somewhat greater in St. Helens than in the country as a whole. Indeed, there appears to have been no serious outbreak of the disease in St. Helens from 1902 to 1910. In 1911, however, the mortality from enteric fever rose to 0·22 per 1000, the number of cases notified reaching a total of 199, as compared with an annual average of 78 in the previous five years, and an interesting feature of Dr. J. J. Buchan's annual report for 1911 is an analysis of this recrudescence. He shows that it was confined to the months of August, September, and October, and was practically limited to two out of the six wards of the borough. These wards are contiguous, and their sanitary circumstances are not only similar generally, but are characterised in common by an excess of the privy-midden and pail-closet system over the rest of the borough. Dr. Buchan discusses the influence of a polluted and offensive stream passing through the invaded area, the water-supply, milk-supply, ice-cream, shell-fish, fried fish, and other food as agencies in this particular outbreak of the disease, and negatives them all, but he believes that the part played by personal infection was very important. Personal infection certainly appears to have been favoured by circumstances, of which the mild type of the disease, and simultaneous outbreaks of diarrhœa and "influenza," leading to delayed and erroneous diagnosis, may be particularly mentioned. Thus, before a single notification of enteric fever in the invaded area was received by Dr. Buchan, as many as 33 persons, it was subsequently ascertained, were already ill, while at least 24 others were already infected with the disease, or almost exactly half the total number of cases which occurred in this area. In these circumstances it is not surprising to find that about a quarter of the invaded houses had multiple cases of the disease. Interesting particulars, too, are given to show that there was considerable grouping of cases among relatives living in different parts of the invaded area, sometimes not close together. No evidence of the existence of chronic carriers, though sought for, came to light. Dr. Buchan discusses the effect of the privy-midden system, and concludes that, though less important than direct personal infection, it was a factor which aided greatly the spread of the disease. In support of this, he states that the attack rate per 1000 persons living in houses with privy middens was 18·2, among those living in houses with pail-closets 10·8, and among those in houses with water-closets 8·7. Although the class of inhabitants living in the three types of houses is said to be alike, which is not always the case in statistics of this kind, it would have been more satisfactory if the proportion of invaded houses in each type had been also mentioned, especially in view of the amount of direct personal infection which is supposed to have taken place. The question of the conversion of privy middens in St. Helens has been before the corporation for very many years, but stimulated perhaps by the recrudescence of enteric fever last year, it appears that the corporation has at length resolved to take effective and systematic action, and it is estimated that the borough will be served entirely by the water-carriage system in about five years. This decision should have a far-reaching and beneficent effect on the health of the town, in which there is evidently room for improvement according to the usual vital statistics included in the report, notwithstanding much that is excellent in the sanitary administration. The report also includes an interesting discussion of the measures which may be taken in connexion with pulmonary tuberculosis. The disease has been voluntarily notifiable in St. Helens since 1901 with somewhat indifferent results, and last year the corporation obtained some stringent powers in a local Act to enforce the compulsory removal of persons suffering from phthisis to "hospital." Whether it will be necessary to utilise these powers to any great extent in the developments that are about to take place generally through the Insurance Act remains to be seen.

Chesterfield Rural District.—Dr. H. Peck's annual report shows that this important rural district, with a population of over 72,000, largely of colliers, possesses a sanitary equipment above the average of rural districts. There are several public water-supplies serving a very large proportion of the inhabitants, and the report contains an interesting account of their sources, some of which yield plumbo-solvent water. The treatment of this is not altogether satisfactory and is to be improved. Besides the essential asset of water-supply the district possesses numerous systems of sewers draining to no fewer than 70 outfalls and sewage disposal works. Though there is not much progress to be recorded as yet in the abolition of the conservancy system, Dr. Peck is hopeful of the future in that the system is becoming more and more unpopular with the inhabitants, and it is not unusual for voluntary conversions to the water-carriage system to be effected. Meanwhile public scavenging is carried out in a very large section of the district. Again, hospital provision for infectious diseases, including small-pox, appears to be on a more-complete scale than is common in rural districts. The district forms part of a large combination of districts which have five hospitals at their disposal. The vital statistics of the district are satisfactory on the whole. One of the chief points for criticism relates to the sanitary staff. Although Dr. Peck is practically a whole-time medical officer, a staff of only three sanitary inspectors certainly seems to be inadequate for a population of 72,000. Another criticism is that in a district so well served with water-supplies and systems of sewers the local authority might well take more energetic measures to get rid of the conservancy system. Probably there is much truth in Dr. Peck's remark that conversion to the water-closet system would do more for the health of the district than anything else.

Doncaster Rural District.—This is another unusual rural district, the report for which is presented by Dr. A. B. Dunne, who succeeded the late medical officer of health towards the middle of 1911. The development which is now taking place in the South Yorkshire coalfield is destined to revolutionise this district completely, and in a manner which is said to be without parallel in this country or abroad, except perhaps in the Transvaal Rand. The growth of population in the last intercensal period, from some 23,000 to nearly 38,000, is probably the precursor of a still greater increase in the current decade. The result is that populous towns are springing up with great rapidity in many parts, and the local authorities of this and adjoining districts have a great opportunity, if only they would seize it, to regulate their growth by town planning schemes. At a conference early in 1911 the Archbishop of York warned the public that the "door of opportunity is closing," and apparently this door is now closed in some parts of this district, though Dr. Dunne states that it is still "ajar" in others, and in others again it is wide open. Happily, the mine-owners have not altogether neglected the matter. The Woodlands model colliery "village," which has attracted considerable attention during the past few years, is in the district, and stands as an example of what may be done—an example, indeed, which is being followed in a few of the other "villages." Meanwhile the sanitary administration of an area which is rapidly changing its character is no easy matter. The control of refuse is the greatest difficulty. Already there seems to be a movement to get rid of the privy-midden system. With the evidence adduced by Dr. Dunne to show that severe prevalence of enteritis as well as of enteric fever last year was fostered by this system, together with the freedom of the "model villages" served by water-closets, it is to be hoped that this movement will grow. The district is served by several good water-supplies.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 95 largest English towns, with an aggregate population estimated at 17,639,881 persons at the middle of this year, 8346 births and 3873 deaths were registered during the week ended August 24th. The annual rate of mortality in these towns, which had been 11·0, 11·5, and 11·6 per 1000 in the three preceding weeks, declined to 11·4 per 1000 in the week under notice. During the first eight weeks of the current quarter the mean annual death-rate in these 95 towns averaged 11·3 per 1000, or 0·1 per 1000 below the average rate recorded in London during the same period. The annual death-rates in the several towns during the week ranged from 2·4 in Hornsey, 2·9 in Oxford, 4·5 in Lincoln, 4·9 in Eastbourne, and 5·1 in Tottenham, to 15·6 in Stoke-on-Trent and in Wigan, 16·0 in Preston and in Stockton-on-Tees, 20·5 in Bootle, and 21·5 in Middlesbrough.

The 3873 deaths from all causes in the 95 towns were 69 fewer than the number in the previous week, and included 396 which were referred to the principal epidemic diseases, against 495 and 423 in the two preceding weeks. Of these 396 deaths, 183 resulted from infantile diarrhœal diseases, 103 from measles, 44 from whooping-cough, 26 from diphtheria, 23 from scarlet fever, and 12 from enteric fever, but not one from small-pox. The mean annual death-rate from these epidemic diseases in the week under notice was equal to 1·2 per 1000, against 1·5 and 1·3 in the two preceding weeks. The deaths of infants under 2 years of age attributed to diarrhœa and enteritis, which had been 187, 239, and 199 in the three preceding weeks, declined to 183, and included 78 in London and its 14 suburban districts, 16 in Liverpool, 10 in Birmingham, 8 in Manchester, 5 in Walsall, and 5 in Leeds. The deaths referred to measles, which had steadily declined from 156 to 109 in the preceding five weeks, were 108 in the week under notice, and caused the highest annual death-rates of 1·4 in Coventry, 1·5 in Hull, 1·6 in Rotherham, 2·2 in Bootle and in Gateshead, 2·5 in Merthyr Tydfil, and 3·9 in Middlesbrough. The fatal cases of whooping-cough, which had been 54, 66, and 49 in the preceding three weeks, fell to 44; 10 deaths were registered in London, 4 in Liverpool, 4 in Manchester, and 3 in South Shields. The deaths attributed to diphtheria, which had been 31, 36, and 30 in the preceding three weeks, declined to 26 during the week, which was the lowest number recorded in any week of the current year; 6 deaths occurred in London, 2 in Birmingham, and 2 in Leeds. The deaths referred to scarlet fever, which had been 22, 29, and 16 in the preceding three weeks, rose to 23, and included 6 in Birmingham, 4 in London, and 2 in Nottingham. The fatal cases of enteric fever, which had been 15, 10, and 20 in the preceding three weeks, fell to 12, of which number 2 were registered in London and 2 in Rhondda.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and in the London Fever Hospital, which had been 1559 at the end of each of the preceding two weeks, had declined to 1512 on August 24th; 167 new cases of this disease were admitted to these institutions during the week, against 175, 207, and 182 in the preceding three weeks. These hospitals also contained on August 24th 825 cases of diphtheria, 599 of measles, 349 of whooping-cough, and 33 of enteric fever, but not one of small-pox. The 1012 deaths from all causes in London in the week under notice were 6 fewer than the number in the previous week, and were equal to an annual death-rate of 11·7 per 1000. The deaths referred to diseases of the respiratory system, which had been 105, 99, and 119 in the preceding three weeks, further rose to 125, and were 40 in excess of the number recorded in the corresponding week of last year.

Of the 3873 deaths from all causes in the 95 towns during the week, 173 resulted from different forms of violence, and 356 were the subject of coroners' inquests. The causes of 21, or 0·5 per cent., of the deaths registered were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London, Manchester, Leeds, Bristol, West Ham, Bradford, Hull, Newcastle-on-Tyne, and in 71 other smaller towns. The 21 uncertified causes of death during the week included 3 in South Shields, and 2 each in Birmingham, in Liverpool, and in Gateshead.

In the 95 largest English towns, having an aggregate population estimated at 17,639,881 persons at the middle of this year, 8603 births and 3785 deaths were registered during the week ended August 31st. The annual rate of mortality in these towns, which had been 11·5, 11·6, and 11·4 per 1000 in the three preceding weeks, fell to 11·2 per 1000 in the week under notice. During the first nine weeks of the current quarter the mean annual death-rate in these 95 towns averaged 11·3 per 1000, against 11·4 in London during the same period. The annual death-rates last week ranged from 4·3 in Acton, 4·5 in Bournemouth, 5·6 in Ilford, 6·0 in Wakefield, and 6·1 in Swindon, to 16·4 in Gateshead, 17·2 in Hastings, 18·1 in Barnsley, 18·9 in Rotherham, and 19·1 in Middlesbrough.

The 3785 deaths from all causes were 88 fewer than the number in the previous week, and included 403 which were referred to the principal epidemic diseases, against numbers decreasing from 495 to 396 in the preceding three weeks. Of these 403 deaths, 203 resulted from infantile diarrhœal diseases, 90 from measles, 61 from whooping-cough, 23 from diphtheria, 18 from scarlet fever, and 8 from enteric fever, but not one from small-pox. The mean annual death-rate from these epidemic diseases last week was equal to 1·2 per 1000 persons living, against 1·3 and 1·2 in the two previous weeks. The deaths of infants under 2 years of age attributed to diarrhœa and enteritis, which had been 239, 199, and 183 in the preceding three weeks, rose to 203 last week, and included 89 in London and its suburban districts, 22 in Liverpool, 10 in Manchester, 6 in Birmingham, and 6 in Burnley. The deaths referred to measles, which had continuously declined from 156 to 108 in the preceding six weeks, further fell to 90 last week, and caused the highest annual death-rates of 1·8 in Gateshead, 2·2 in Bootle, 2·5 in Rotherham and in Merthyr Tydfil, and 5·4 in Middlesbrough. The fatal cases of whooping-cough, which had been 66, 49, and 44 in the preceding three weeks, rose to 61 last week; 19 deaths were registered in London, 7 in Liverpool, 3 in Burnley, and 3 in Newcastle-on-Tyne. The deaths attributed to diphtheria, which had been 36, 30, and 26 in the preceding three weeks, further declined to 23 last week, and included 3 in Portsmouth, 3 in Manchester, and 2 each in London, Birmingham, Liverpool, and Leeds. The deaths referred to scarlet fever, which had been 29, 16, and 23 in the preceding three weeks, were 18 last week; 3 deaths occurred in Stoke-on-Trent, 3 in Birmingham, and 2 in Manchester. The fatal cases of enteric fever, which had been 10, 20, and 12 in the preceding three weeks, fell to 8 last week, and included 2 in London and 2 in Bradford.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and in the London Fever Hospital, which had been 1559, 1559, and 1512 at the end of the three preceding weeks, slightly rose to 1525 on Saturday last; 213 new cases of this disease were admitted to these institutions during the week, against 207, 182, and 167 in the preceding three weeks. These hospitals also contained on Saturday last 832 cases of diphtheria, 553 of measles, 328 of whooping-cough, 37 of enteric fever, and 1 of small-pox. The 993 deaths from all causes in London were 19 fewer than the number in the previous week, and were equal to an annual death-rate of 11·5 per 1000. The deaths referred to diseases of the respiratory organs, which had increased from 99 to 125 in the three preceding weeks, declined to 91 last week, but were 18 in excess of the number registered in the corresponding week of last year.

Of the 3785 deaths from all causes in the 95 towns last week, 177 resulted from different forms of violence, and 340 were the subject of coroners' inquests. The causes of 44, or 1·2 per cent., of the deaths registered were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, Bristol, Bradford, Hull, Newcastle-on-Tyne, Nottingham, Portsmouth, and in 64 other smaller towns. The 44 uncertified causes of death last week included 6 in Liverpool, 5 in Birmingham, 4 in London, and 3 each in Blackburn, Preston, and Blackpool.

HEALTH OF SCOTCH TOWNS.

In the 13 largest Scotch towns, with an aggregate population estimated at 2,182,400 persons in the middle of this year,

994 births and 493 deaths were registered during the week ended August 24th. The annual rate of mortality in these towns, which had been 13·4, 13·4, and 13·1 per 1000 in the preceding three weeks, further declined to 11·8 per 1000 in the week under notice. During the first eight weeks of the current quarter the mean annual rate of mortality in these Scotch towns averaged 13·3 per 1000, against 11·3 per 1000 in the 95 large English towns during the same period. Among the several Scotch towns the death-rates during the week ranged from 6·0 in Kilmarnock, 6·5 in Clyde bank, and 7·2 in Perth, to 15·3 in Falkirk, 16·8 in Kirkcaldy, and 18·9 in Dundee.

The 493 deaths from all causes in the 18 Scotch towns were 53 fewer than the number in the previous week, and included 39 which were referred to the principal epidemic diseases, against numbers declining from 66 to 61 in the four preceding weeks. Of these 39 deaths, 19 resulted from infantile diarrhœal diseases, 11 from whooping-cough, 5 from diphtheria, and 4 from measles, but not one from small-pox, enteric fever, or scarlet fever. These 39 deaths from the principal epidemic diseases were equal to an annual death-rate of 0·9 per 1000, or 0·3 per 1000 below that recorded in the 95 large English towns. The deaths of infants under 2 years of age attributed to diarrhœa and enteritis, which had been 37, 36, and 21 in the preceding three weeks, further fell to 19 in the week under notice, and included 8 in Glasgow, 3 in Dundee, and 2 each in Aberdeen, Govan, and Coatbridge. The deaths referred to whooping-cough, which had been 12, 10, and 22 in the preceding three weeks, declined to 11; 2 deaths were registered in Edinburgh and 2 in Leith. The 5 fatal cases of diphtheria during the week were equal to the average in the seven preceding weeks of the quarter, and included 3 in Glasgow. The deaths attributed to measles numbered 4, against 11 and 7 in the two preceding weeks, and comprised 2 in Glasgow and 2 in Dundee.

The deaths in the 18 Scotch towns referred to diseases of the respiratory system, which had been 62, 58, and 62 in the preceding three weeks, fell to 55 in the week under notice; 23 deaths were attributed to different forms of violence, against 19 and 25 in the two previous weeks.

In the 18 largest Scotch towns, with an aggregate population estimated at 2,182,400 persons in the middle of this year, 1087 births and 548 deaths were registered during the week ending August 31st. The annual rate of mortality in these towns, which had declined from 13·4 to 11·8 per 1000 in the preceding four weeks, rose to 13·1 per 1000 in the week under notice. During the first nine weeks of the current quarter the mean annual rate of mortality in these Scotch towns averaged 13·3 per 1000, against 11·3 per 1000 in the 95 large English towns during the same period. Among the several Scotch towns the annual death-rates last week ranged from 4·6 in Falkirk, 6·0 in Kilmarnock, and 7·5 in Motherwell, to 14·6 in Glasgow, 15·1 in Greenock, and 17·7 in Dundee.

The 548 deaths from all causes were 55 in excess of the number in the previous week, and included 59 which were referred to the principal epidemic diseases, against numbers declining from 66 to 39 in the preceding five weeks. Of these 59 deaths, 29 resulted from infantile diarrhœal diseases, 12 from whooping-cough, 7 from diphtherin, 5 from scarlet fever, 4 from measles, and 2 from enteric fever, but not one from small-pox. The 59 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·4 per 1000, against 1·2 per 1000 in the 95 large English towns. The deaths of infants under 2 years of age attributed to diarrhœa and enteritis, which had declined from 37 to 19 in the preceding four weeks, rose to 29 last week, and included 24 in Glasgow and 2 in Dundee. The deaths referred to whooping-cough, which had been 10, 22, and 11 in the preceding three weeks, were 12 last week; 4 deaths were registered in Dundee, 2 in Edinburgh, and 2 in Paisley. The 7 fatal cases of diphtheria last week were 2 in excess of the average in the preceding weeks of the quarter, and included 5 in Glasgow. The 5 deaths attributed to scarlet fever were slightly in excess of recent weekly numbers, and comprised 2 in Glasgow, 2 in Dundee, and 1 in Paisley. The deaths referred to measles, which had been 11, 7, and 4 in the preceding three weeks, were again 4 last week, and included 2 in Dundee. The 2 fatal cases of enteric fever were recorded in Glasgow and Edinburgh respectively.

The deaths referred to diseases of the respiratory system in the 18 Scotch towns, which had been 58, 62, and 55 in the preceding three weeks, rose to 68 last week; 19 deaths were attributed to different forms of violence, against 25 and 23 in the preceding two weeks.

HEALTH OF IRISH TOWNS.

In the 22 town districts of Ireland, having an estimated population of 1,154,150 persons at the middle of this year, 531 births and 327 deaths were registered during the week ended August 24th. The annual rate of mortality in these towns, which had declined from 16·4 to 13·1 per 1000 in the preceding three weeks, rose to 14·8 per 1000 in the week under notice. During the first eight weeks of the current quarter the mean annual death-rate in these Irish towns averaged 14·7 per 1000; in the 95 large English towns the corresponding death-rate did not exceed 11·3 per 1000, while in the 18 Scotch towns it was equal to 13·3 per 1000. The annual death-rates in the several Irish towns during the week were equal to 18·6 in Dublin (against 11·7 in London), 12·6 in Belfast, 17·0 in Cork, 8·9 in Londonderry, 14·9 in Limerick, and 11·4 in Waterford, while in the 16 smaller towns the mean rate was 11·8 per 1000.

The 327 deaths from all causes in the 22 Irish towns were 36 in excess of the number in the previous week, and included 43 which were referred to the principal epidemic diseases, against numbers declining from 49 to 31 in the preceding three weeks; of these 43 deaths, 21 resulted from diarrhœal diseases, 8 from whooping-cough, 5 from measles, 4 from diphtheria, 3 from scarlet fever, and 2 from enteric fever, but not one from small-pox. These 43 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·9 per 1000, against 1·2 per 1000 in the 95 large English towns and 0·9 in the 18 Scotch towns. The deaths attributed to diarrhœa and enteritis, which had declined from 24 to 13 in the preceding three weeks, rose to 21, and included 19 of infants under 2 years of age; 12 deaths were recorded in Dublin, 5 in Belfast, and 2 in Cork. The deaths referred to whooping-cough, which had been 4, 9, and 6 in the preceding three weeks, were 8 in the week under notice; 5 deaths were registered in Ballymena and 2 in Limerick. The fatal cases of measles, which had declined from 10 to 5 in the preceding five weeks, were again 5, and comprised 2 in Dublin, 2 in Limerick, and 1 in Belfast. Of the 4 deaths attributed to diphtheria during the week, 2 occurred in Dublin and 2 in Galway. Two of the 3 deaths from scarlet fever and the 2 fatal cases of enteric fever were registered in Dublin.

The deaths referred to diseases of the respiratory organs in the 22 towns, which had been 33, 41, and 40 in the preceding three weeks, rose to 46 in the week under notice. Of the 327 deaths from all causes, 124, or 38 per cent., occurred in public institutions, and 3 resulted from different forms of violence. The causes of 10, or 3·1 per cent., of the total deaths registered were not certified either by a registered medical practitioner or by a coroner after inquest; in the 95 large English towns during the week the proportion of uncertified causes of death did not exceed 0·5 per cent.

In the 22 town districts of Ireland, having an estimated population of 1,154,150 persons at the middle of this year, 608 births and 330 deaths were registered during the week ending August 31st. The annual rate of mortality in these towns, which had been 13·1 and 14·8 per 1000 in the preceding two weeks, rose to 14·9 per 1000 in the week under notice. During the first nine weeks of the current quarter the mean annual death-rate in these Irish towns averaged 14·7 per 1000; in the 95 large English towns the corresponding death-rate did not exceed 11·3 per 1000, while in the 18 Scotch towns it was equal to 13·3 per 1000. The annual death-rates in the several Irish towns last week were equal to 15·2 in Dublin (against 11·5 in London), 12·4 in Belfast, 17·0 in Cork, 21·7 in Londonderry, 29·8 in Limerick, and 17·1 in Waterford, while in the 16 smaller towns the death-rate did not exceed 13·9 per 1000.

The 330 deaths from all causes in the 22 Irish towns were 3 in excess of the number in the previous week, and included 36 which were referred to the principal epidemic diseases, against 31 and 43 in the preceding two weeks; of these 36 deaths, 16 resulted from diarrhœal diseases, 7 from whooping-cough, 4 from measles, 4 from scarlet fever, 4 from diphtheria, and 1 from enteric fever, but not one from small-pox. These 36 deaths from the principal

epidemic diseases were equal to an annual death-rate of 1·6 per 1000; in the 95 large English towns the death-rate from these diseases was equal to 1·2 per 1000, while in the 18 Scotch towns it equalled 1·4. The deaths from diarrhœa and enteritis, which had been 21, 13, and 21 in the preceding three weeks, declined to 16 last week, and comprised 6 in Dublin, 5 in Belfast, 3 in Londonderry, and 2 in Waterford. The deaths referred to whooping-cough, which had been 9, 6, and 8 in the preceding three weeks, were 7 last week, and included 4 in Dublin and 2 in Limerick. The fatal cases of measles, which had declined from 10 to 5 in the preceding six weeks, were 4 last week, and included 2 deaths in Dublin. The 4 deaths attributed to scarlet fever, 2 of which occurred in Dublin, were slightly in excess of the average in the preceding weeks of the quarter. The 4 deaths referred to diphtheria were equal to the number in the previous week; the fatal case of enteric fever occurred in Cork.

The deaths referred to diseases of the respiratory system in the 22 towns, which had been 41, 40, and 46 in the preceding three weeks, rose to 49 in the week under notice. Of the 330 deaths from all causes, 119, or 36 per cent., occurred in public institutions, and 7 resulted from different forms of violence. The causes of 8, or 2·4 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 95 large English towns the proportion of uncertified causes of death last week did not exceed 1·2 per cent.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments have been notified:—Fleet-Surgeons: E. Corcoran to the *King Alfred;* and E. T. Meagher to the *Cumberland*. Staff-Surgeons: A. J. Laurie to the *Prince of Wales*, additional, for Second and Third Fleets; H. R. H. Denny to the *Prince of Wales*, additional, for Second and Third Fleets; J. K. Raymond to the *Queen*, additional, for Second and Third Fleets; G. D. Walsh to the *Pembroke*, additional, for disposal; F. F. Lobb to the *King Alfred*, additional, for Second and Third Fleets; and W. G. Westcott to the *Glasgow*, on recommissioning. Surgeons: J. L. Barford to the *Victory*, additional, for disposal; C. R. Worthington to the *Vivid*, additional, for disposal; and W. C. Carson to the *Excellent*, additional, for the *Revenge*.

ARMY MEDICAL SERVICE.

Major Matthew H. G. Fell, Royal Army Medical Corps, to be a Deputy Assistant Director-General at the War Office, vice Major E. T. F. Birrell (dated August 18th, 1912).

ROYAL ARMY MEDICAL CORPS.

Colonel Bruce M. Skinner, M.V.O., has been appointed Commandant and Director of Studies at the Royal Army Medical College, London, vice Colonel E. J. E. Risk.

Lieutenant-Colonel E. H. L. Lynden-Bell, lately commanding the Station Hospital and Senior Medical Officer at Meerut Cantonment, has been selected for appointment as Deputy Director of Medical Services in the London District, in succession to Colonel W. G. A. Bedford, C.M.G. Lieutenant-Colonel J. W. Bullen has been appointed to command the Station Hospital at Agra Cantonment, vice Major W. A. Woodside. An exchange in the roster for service abroad has been sanctioned between Lieutenant-Colonel F. H. M. Burton, at present holding charge of the Military Hospital at Warley, who was under orders to proceed to South Africa on Sept. 4th, and Lieutenant-Colonel A. J. Luther, in charge of the Military Hospital at Fermoy.

Major A. E. C. Keble, on return from a tour of service at Gibraltar, has been appointed to the Scottish Command for duty. Major J. W. West has been transferred from the Military Hospital at Rawal Pindi Cantonment to Murree. Major W. J. Taylor has been appointed to the Eastern Command for duty pending embarkation to Sierra Leone, West Africa, in January next. Major J. W. Langstaff has been appointed to the Recruiting Medical Staff in the London District. Major R. J. W. Mawhinny, at present holding medical charge of the Military Hospital at Athlone, has been placed under orders for a tour of service in India with the Northern Army.

Captain F. M. M. Ommanney, from the Royal Army Medical College, has been appointed for duty to the Eastern Command. Captain J. Fairbairn has been placed under orders for duty in the Dublin District. Captain J. E. H. Gatt, lately holding charge of the Military Hospital at Benares, has been granted four months' leave of absence on medical certificate. Captain F. A. H. Clarke has been placed under orders for service in India, and on arrival will be appointed to the Northern Army. Captain C. R. Millar has embarked for a tour of duty at Sierra Leone, West Africa. Captain A. B. Smallman has been appointed to the London District, and posted for duty to the Queen Alexandra Military Hospital, Grosvenor-road. Captain T. E. Harty has been selected for appointment as Specialist in Dermatology and Venereal Diseases to the Dublin District in succession to Captain A. T. Frost, placed under orders for a tour of duty in South Africa. Captain G. H. Rees, on return from a tour of service at Alexandria, has been appointed to the Belfast District. Captain A. S. Williams has been transferred from the Military Hospital at Nowshera Cantonment to Khanspur. Captain J. A. B. Sim has taken up duty at Buddon. Captain A. D. O'Carroll, on return from Aden, has been placed in Medical Charge at Churn Camp. Captain H. Gall has been transferred from the Military Hospital at Ambala Cantonment to Gharial. Captain N. Dunbar Walker, specialist in physical training at the Royal Army Medical College, has been placed under orders for a tour of duty with the Southern Army in India. Captain A. W. Gater has taken over Medical Charge of the Fourth Dragoon Guards at Hamilton Camp, Salisbury Plain. Captain F. H. Bradley has been selected by H.E. the Commander-in-Chief in India for appointment as Specialist in Advanced Operative Surgery to the Eighth (Lucknow) Division. An exchange on the Indian roster has been sanctioned between Major N. Faichnie, specialist sanitary officer, Fifth (Mhow) Division, and Major M. P. Corkery; the former officer will remain in India instead of proceeding home during the ensuing trooping season.

Lieutenant J. D. Bowie has been transferred from the Military Hospital at Aldershot to Ewshott for duty. Lieutenant C. D. K. Leaver has taken up duty at the Military Hospital, Cork. The following Lieutenants on probation have joined the Royal Army Medical College for their preliminary courses of instruction in military medical subjects:—W. B. Laird, F. R. B. Skrimshire, T. E. Osmond, E. B. Allnutt, H. C. Todd, M. Burnett, G. A. Blake, R. W. Vint, H. W. L. Allott, E. C. Lang, J. Hare, E. W. Russell, R. A. Flood, P. M. J. Power, E. V. Whitby, G. F. Allinson, R. E. Porter, T. H. Balfour, R. B. Phillips, H. J. S. Shields, H. J. F. Panton, J. E. Hepper, N. W. Stevens, R. C. Carlyle, L. T. Poole, and J. C. Sproule. Lieutenant P. A. With has joined for duty in the Cork District and Lieutenants C. M. Ingoldby, S. J. Higgins, and L. R. L'Estrange have taken up duty in the Belfast District. Lieutenant A. T. Frost has been appointed to the Medical Charge of the 18th Queen Mary's Own Hussars at Hamilton Camp, Salisbury Plain. Lieutenant D. T. M. Large has been posted for duty to the Scottish Command. Lieutenant A. P. O'Connor has embarked for a tour of service in Egypt.

The undermentioned Captains to be Majors:—John H. Brunskill, Arthur C. Duffey, Charles D. Myles, Hugh A. Davidson, and Samuel B. Smith (dated August 29th, 1912).

The undermentioned Lieutenants are seconded under the provisions of Article 300, Royal Warrant for Pay and Promotion, 1909:—Robert B. Price, James L. Huggan, Charles C. Jones, Robert G. Shaw, Alexander L. Urquhart, and Leslie Dunbar (dated July 26th, 1912).

In the Special Reserve of Officers the undermentioned Lieutenants to be Captains:—Robert T. C. Robertson and Joseph G. McCutcheon (dated Sept. 1st, 1912).

INDIAN MEDICAL SERVICE.

The King has approved of the promotion of the following officers:—Captains to be Majors: William Lapsley, Alfred Spitteler, George Joseph Grafton Young, James Good, and William Gavin Hamilton (dated June 28th, 1912); Charles William Francis Melville, Robert McCarrison, James Masson, William Morris Anderson, William Hugh Leonard, Andrew Watson Cook Young, James Graham Goodenough Swan, and Robert Basil Boothby Foster (dated July 29th, 1912). Lieutenant to be Captain: Harold Holmes King (dated Jan. 30th, 1912).

The King has approved of the confirmation of the commissions of the following Lieutenants on probation of the Indian Medical Service, with effect from Jan. 27th, 1912 :—Ronald Herbert Candy, Philip John Veale, Jamasji Cursetji Bharucha, Henry Hingston, Heerajee Jehangir Manockjee Cursetjee, Frederick Jasper Anderson, Peter Fleming Gow, John Simson Stuart Martin, Robert Victor Morrison, Jogesh Chandra Dey, James Walker Jones, and James Hall Hislop.

The King has approved of the admission of the undermentioned to the Indian Medical Service as Lieutenants on probation :—John Dykes Wilson, Laurence Allfrey Pelham Anderson, William Calder Paton, James Bennett Hance, Stephen Gordon, Graham Yalden Thomson, Harold Kirkby Rowntree, Basil Franklin Eminson, Anthony Kennedy, Jordan Constantine John, Sorab Dhunjibhoy Ratnagar, and Colin McIver (dated July 27th, 1912).

The King has approved of the retirement of Major Pulteney Charles Gabbett (dated August 26th, 1912).

Lieutenant-Colonel R. Robertson has been appointed to officiate as Principal Medical Officer of the Secunderabad Brigade, Southern Army in India, in succession to Colonel J. Smyth, at present officiating as Surgeon-General with the Government of Madras. Lieutenant-Colonel C. F. Fearnside, Madras Presidency, has arrived home on leave of absence from India. Lieutenant-Colonel J. T. Daly, medical officer 9th Gurkha Rifles, has taken up duty as Officiating Principal Medical Officer of the Kohat Brigade, Northern Army.

Major W. H. Ogilvie has taken up duty as Special Medical Officer of Health at the Delhi extension works, in succession to Major E. L. Ward, granted leave of absence on medical certificate. Major N. R. J. Ranier, civil surgeon at Chindwara, has been transferred for duty at Saugor on relief by Captain W. J. Fraser. Major H. Ainsworth, professor of ophthalmic surgery at the Medical College, Lahore, has been granted three months' combined leave of absence. Major J. W. Watson, second-class agency surgeon, has been appointed Agency Surgeon to the Eastern States of Rajputana.

Captain C. A. Gill has been appointed to officiate as Deputy Sanitary Commissioner in the Punjab, in succession to Major H. M. Mackenzie, transferred. Captain C. H. Fielding has taken up duty as Superintendent of the Insein Central Jail. Captain C. L. Dunn has been appointed Deputy Sanitary Commissioner in the United Provinces of Agra and Oudh, in succession to Major J. C. Robertson, appointed Sanitary Commissioner with the Government of India at Simla. Captain J. Drake has been selected to officiate as Assay Master at Bombay during the absence on six months' leave of Lieutenant-Colonel L. Jones. The services of Captain H. C. Buckley, plague medical officer in the Punjab, have been placed at the disposal of the Government of India, Department of Education. Captain E. J. C. McDonald, civil surgeon at Sibsagar, has been appointed Supernumerary Medical Officer in Assam and posted to Dibrugarh to hold charge of the Lakimpur Military Outpost at Rotung. Captain J. M. A. MacMillan, civil surgeon at Hoshangabad, has been granted three months' privilege leave of absence. The services of Captain F. C. Frazer have been placed at the disposal of H.E. the Commander-in-Chief by the Home Department of the Government of India. Captain J. Pierpoint has been appointed Agency Surgeon at the Khyber Pass District. Captain F. T. Thompson has been granted six months' leave of absence home from India on medical certificate. Captain R. A. Needham has been selected for appointment as Officiating Medical Officer of Health at Simla. Captain E. W. C. Bradfield has been appointed for duty in the Civil Medical Department of Madras Presidency. Captain E. P. Connor, plague medical officer at Gaya, has been granted 18 months' combined leave of absence home from India.

Lieutenant M. J. Holgate has taken up duty as Specialist in Radiography and Electrical Science to the Fourth (Quetta) Division of the Northern Army in India.

TERRITORIAL FORCE.

Army Medical Service.

Colonel Joseph W. Blandford, K.H.P., on the expiration of the tenure of his appointment as an Assistant Director of Medical Services, is retired, and is granted permission to retain his rank and to wear the prescribed uniform (dated August 28th, 1912).

Royal Army Medical Corps.

2nd London (City of London) Field Ambulance, Royal Army Medical Corps: Lieutenant Frederick Morres resigns his commission (dated August 28th, 1912).

3rd London (City of London) Field Ambulance, Royal Army Medical Corps: Frank Hubert Robbins to be Lieutenant (dated July 10th, 1912).

Attached to Units other than Medical Units.—Captain Hugh Richardson resigns his commission (dated August 28th, 1912).

For Attachment to Units other than Medical Units.—Alfred Norman Crawford to be Lieutenant (dated July 12th, 1912). Captain William Alexander Gibb, from the 1st East Anglian Field Ambulance, Royal Army Medical Corps, to be Captain (dated July 16th, 1912).

Supernumerary for Service with the Officers Training Corps.—George Alexander Williamson to be Lieutenant (dated July 13th, 1912).

The Territorial Decoration has been conferred on Surgeon-Major John Nightingale, 1st West Riding Brigade, Royal Field Artillery, and on Major Fitzwilliam O'Grady, attached to the 5th Battalion, The Manchester Regiment.

DISTINGUISHED SERVICE ORDER.

Major James Davidson, I.M.S., has been appointed a Companion of the Distinguished Service Order in recognition of the services in connexion with the recent operations against the Abors on the North-Eastern Frontier of India. The promotion is dated June 6th, 1912.

DEATHS IN THE SERVICES.

Mr. Charles Ede, late Staff-Surgeon R.N., who qualified in 1844, has passed away at his residence at Bramley, near Guildford, in his ninetieth year. He entered the Royal Navy 67 years ago, and after serving for a few years on the Pacific station was appointed surgeon naturalist to H.M.S. *Assistance*, taking part in an expedition under Captain Crozier in search of Sir John Franklin. He returned to England in 1851.

"THE MILITARY SURGEON."

To the *Military Surgeon* (Washington, D.C.) for August Captain Louis C. Duncan contributes one of his welcome studies in medico-military history, an account of the management of sick and wounded in Sherman's great march "from Atlanta to the Sea." Sherman left Chattanooga with 100,000 men in May, 1864, and reached Atlanta in September, having lost 30 per cent. killed and wounded. In November he left Atlanta with 62,000 tough, carefully selected veterans, men with large experience of campaigning, men like our soldiers in South Africa at the end of the war, and besides destroying railways and foraging all the way, he marched 12 miles daily, including Sundays, till he reached Savannah some 30 days later. The sick and weakly were scrupulously eliminated at the start, and the sick list during the march was under 2 per cent. daily. The army bivouacked throughout; transport was cut down remorselessly, but ambulances were numerous, one for every hundred men; experience of war had proved this large supply necessary. The small amount of illness amongst these picked men is ascribed to their continual advance to clean camping grounds, to the plentiful food brought in by the foraging parties, and to the unbroken success of the expedition, which kept the men cheerful. Passed Assistant Surgeon A. J. McLaughlin describes how he got cholera out of a Philippine prison by identifying the carriers and compelling hand-washing after leaving the latrines and before eating. He also describes the United States method of examining the immigrants from a cholera-infected district. To save quarantining them for five days their stools are examined. A dose of salts in the early morning brings the cholera vibrio out if it is there; specimens are planted out in peptone solution, in six hours films are examined, and if anything suspicious is seen (in some 10 per cent. of cases) that culture is plated out and the organism identified by agglutination with a 1 to 200 specific cholera serum. Ten bacteriologists working with Dr. McLaughlin at Boston, Mass., examined completely 1200 stools in 48 hours. The Tropical Disease Board, after examining 1500 men in detail in the Philippines, finds that neither light-complexioned nor dark-complexioned

men have any special susceptibility or resistance to the conditions of life in the tropics.[1] They report that the temperature and red blood corpuscle counts are practically the same for men aged about 30 in the tropics and in the temperate zone, and they express the opinion that most tropical anæmias are due not to the climate but to intestinal parasites. Major W. T. Davidson reports that in a Texan garrison of 400 men during five months 22 cases of venereal disease came under treatment, but that when he insisted on thorough prophylaxis they had in the next five months only 3 cases. A report from the Army Medical School states that one prophylactic ointment was effective, the next supply no use at all, the reason being apparently that the first contained camphor and lard as well as calomel, phenol, and lanoline, and the second ointment, without camphor and lard, was not so convenient in application, for it did not spread over the mucous membrane. This article should be read. To July 15th there had been 2 cases of plague in Havana and 37 cases (with 23 deaths) in Porto Rico. These outbreaks[2] are under the capable management of the Public Health and Marine Hospital Service.

Correspondence.

"Audi alteram partem."

THE MEDICAL PROFESSION AND THE NATIONAL INSURANCE ACT.

To the Editor of THE LANCET.

SIR,—There is nothing particularly courageous in the course of action of the 14 gentlemen to whom Mr. W. Owen Williams refers, if, as he seems to imply, a large section of the profession approve of it. Personally, I regret exceedingly the course they have taken, and believe that my regret will be shared by the great majority of the profession. Dr. Addison's position is a peculiar one. He is essentially a politician, and it might be reasonably considered that his first duty is to his constituents and not to the profession of which he is a distinguished member. But with regard to the other 13 the case is different. Except for the action they have taken, no one could have imputed any political motives to them. They have no constituents to answer to, and it might have been thought that in this matter their first duty was towards their profession. To the argument that by this course of action they are really endeavouring to promote the best interests of that profession, it might surely be asked who made them judges? It seems to me that a self-elected judge who decides as to what is good for his profession according to his own notions, and deliberately flouts the opinions of representatives of that profession, fairly elected from all parts of the country to speak on this question, is on dangerous ground when he imputes "selfishness and political partisanship" to those who differ from him.

I do not propose to criticise these 13 gentlemen, whose arguments Mr. Williams finds "so weighty and unanswerable," neither do I "dub them potential blacklegs." But I am certain that their action is more likely to meet the approval of potential and other blacklegs than of that large section of the profession to which he refers. Mr. Williams may think the resolution of the British Medical Association at Liverpool "fatuous," but most of those who have had anything to do with the organisation of the profession in the present crisis, and by reason of their representative position have had the means of gauging the opinions of their brethren, will consider the epithet much more applicable to the "confidence" that can "predict that a majority of the profession would be in favour of a settlement" on a basis of a capitation fee of 7*s.* 6*d.*, including medicine, for domiciliary attendance. His suggestion that his professional brethren "are cowed, and vote against their conscience," and that "peaceful persuasion" looms ahead and saps their independence, is too silly to merit serious consideration, and needs only be treated with the contempt it deserves.

When it is considered that "the gentlemen now ruling the Association" include all shades of politics, the folly of attributing their action to political motives is abundantly manifest, and if the "schism of the utmost magnitude" does take place, the profession will be much more likely to lay it at the door of himself and the 13 gentlemen he alludes to and their favourers than to those leaders of the profession who are earnestly labouring amid great difficulties to insure that it shall be treated by the Government with common justice. Thinking, as they do, that no good system of national medical attendance can arise out of the present provisions of the National Insurance Act, it seems to them that the first duty of *medical citizenship* is to prevent the Government from embarking on a scheme so inimical to the best interests of the community.

I am, Sir, yours faithfully,

August 24th, 1912. MAJOR GREENWOOD.

[1] THE LANCET, May 11th, 1912, p. 1287.
[2] THE LANCET, August 10th, p. 394.

To the Editor of THE LANCET.

SIR,—I am one of those who believe that the Representative Meeting made a great mistake when they passed a resolution consenting to work the sanatorium benefit. The following are some of my reasons: 1. That if there was going to be any question of the sanatorium benefit being separate from any other form of medical benefit under the Act, it ought to have been referred separately to the divisions. 2. That at the Representative Meeting in February, 1912, a resolution was passed which stated "that the Commissioners be informed in plain and unmistakable language *that we would not work under the Act unless and until our minimum demands were granted us.*" Surely we all understood the sanatorium benefit was included in this resolution. If it was not, then the divisions should have been informed that it was not. 3. That to consent to work the sanatorium benefit, and at the same time to compel all members of the Association to resign their positions on the Advisory Committees, was to me the most extraordinary policy in the history of the transactions of the British Medical Association. You have only to look at the reports of recent meetings of the county councils to see what has been the outcome of such a policy. In the first place it has made the medical officers of health a privileged class under the Act, to the detriment of the expert on tuberculosis and the general practitioner.

I will quote from two reports of county councils which I saw reported last week:—

1. At a meeting of the Cornwall Insurance Committee Dr. Burnet (county medical officer) said "a whole-time tuberculosis officer had to be appointed. The Local Government Board did not agree with his (Dr. Burnet's) undertaking that work. He had hoped he would have been able to have saved the county that large expense, because he felt he could undertake the work such as would be bound to be in its slowness for the first two or three years, but the Board would not approve of that, and wanted a whole-time tuberculosis officer with a minimum salary, which he was afraid would be large."

I should like to ask Dr. Burnet if he was going to give his services gratuitously had he been appointed? At any rate, his remarks could only be interpreted that as county medical officer he had not enough work to do. It will be interesting to see if he will apply to have his salary reduced in order that the extra expense to the county of the tuberculosis officer could be balanced!

Again:

In a scheme put before the Hants county council at their last meeting the council was asked to appoint the county medical officer as chief tuberculosis officer, and also to appoint six whole-time medical officers with a salary of £250 each per annum, with travelling expenses, and these officers were to divide their work between medical inspection of school children and tuberculosis work under the Act.

Anyone who has read the resolutions of the last Representative Meeting would see that such appointments as recommended by the Hants county council are not in accordance with the recommendations of that meeting.

I do not want to take up any more of your valuable space, but simply wish to point out that, in my opinion, the British Medical Association, in deciding to work the sanatorium benefit and at the same time calling on all members of the Advisory Committee to resign, has embarked on a most dangerous and, I am afraid, disastrous policy as far as the expert on tuberculosis and the general practitioner is concerned. Medical officers of health have suddenly developed into "specialists" on tuberculosis, they are privileged to sit on the advisory committees, so that owing to the policy of the British Medical Association the sanatorium benefit is in their hands. The question arises, Are they qualified to hold such

posts? Surely the sanatorium benefit ought to be controlled and worked by experts.

I am, Sir, yours faithfully,

H. J. GODWIN,
Honorary Secretary, Winchester Division, British Medical Association.

P.S.—I should like to add that I myself have no intention of ever working under the Act.

August 25th, 1912.

To the Editor of THE LANCET.

SIR,—In his letter to you Mr. G. Lenthal Cheatle, who is, I believe, a consultant, implores the Royal Colleges and the British Medical Association to reconsider their decisions and to wait on rumour. In a recent speech the Chancellor of the Exchequer promised generous treatment if we would only trust him. General practitioners, the bulk of the profession, want facts, not rumours, and definite figures instead of specious promises.

Mr. Lenthal Cheatle does not mention the wage limit, which is almost if not quite as important a point as the capitation fee.

I am, Sir, yours faithfully,

Sept. 2nd, 1912. J. C. POLLOCK MUIR.

To the Editor of THE LANCET.

SIR,—It is popularly believed that the majority of medical men are antagonistic to the fundamental principles of the National Insurance Act. But such is not, I believe, the case. Most medical men plead that the Act should be amended and extended; they pray for terms, equitable and adequate, to enable them to work honourably under it. No more does the battle of the Insurance Act represent the pugilistic record of our profession than does the battle of Stirling Bridge that of our country. For we have had innumerable skirmishes and several pitched battles, not only with clubs, but with municipalities and powerful legislators. Public opinion has been agitated for years over what may be reasonably considered adequate remuneration for medical men.

Town councils think they are the custodians of the public conscience within their borough areas. Let me point out what the public conscience—through the town council of such a town as Southport—declares as adequate and equitable remuneration for its principal officials. In such a town as Southport the salary of the town clerk is £900 a year, the salary of the borough surveyor is £600 a year, the salary of the medical officer of health is £500 a year. Personally, I think £1000 a year is not excessive remuneration for a man like the town clerk of Southport. A man of such calibre had he followed a purely business line would probably have derived an income therefrom of at least £2000 a year. But I ask, "What of the medical officer of health of a town like Southport? What has he done? What has he failed to do that the public conscience should deem him worthy only of £500 a year? Has he sinned in spending at least six years studying for his professional work? Was it criminal on his part to spend £1000 at least on class fees and other outlays at college? Should he have entered an office under a weekly pay as a borough surveyor's assistant?" Anyhow, he has failed to satisfy the public conscience that his services as medical officer of health are worth more than £500 a year.

But the hot, yet cold, nature; the wet, yet dry, skin of the amphibian public conscience is shown better when we compare the salary given to the borough surveyor of such a town as Southport. Personally, I consider the surveyor of such a town should also be adequately remunerated. I think he deserves at least £600 a year. Had he been practically interested in a mechanical engineering business he might have made more money and been his own master. Besides, had he spent six years at college, £1000 on class fees and other outlays, not one of your readers would have considered him adequately remunerated at a sum less than £1000 a year, and he has won the race for adequate remuneration against the medical officer of health of a town like Southport.

I think I am right when I state that equitable and adequate remuneration for medical officers of health is almost an unknown quantity in municipal arithmetic. The Chancellor of the Exchequer has stated that no responsible Government would dare to ask the electorate to supply the sum necessary to meet our demands. Consequently, I think we have good cause to look upon the Chancellor as "the National Cobbler," who, regardless of consequences, works on the principle of making the foot fit the boot, and vindicates the cruel process by stating that no responsible bootmaker—acting in the public interest and with the knowledge that the area of these isles is limited—would dream of acting otherwise. Nevertheless, I suggest that the Chancellor of the Exchequer be thanked for his desire, as publicly expressed, to increase our remuneration for professional services 50 per cent., and that we inform him that if he can see his way to guarantee to us a 50 per cent. increase on the amount presently received for medical services we will forthwith enter into a binding agreement with him, and that without reference to income-limit or capitation fee, to work the medical benefits of the National Insurance Act on his terms financially during the unexpired portions of our natural lives.

And now, after fully 20 years of professional work, and within 20 years of the allotted span of life, I ask, "Can we corroborate 'Sacred Writ,' where it states that 'all that a man hath will he give for his life'?" I have tried to show that most men, and particularly public bodies, are not inclined to sufficiently remunerate the doctor, whose special duty it is to make life "spin out" as long as possible, and you will admit that most men are more inclined to sufficiently remunerate those men—lawyers—who make it their special duty to look after "all that a man hath." And it does seem strange that while the wife of an agricultural labourer is sorry for the medical man whose shoe-leather is "down in the heel," yet the better-class artisan is very apt to grumble if he is asked to give his medical man—for attendance and medicine—the price of an ounce of "black cat" per week.

The truth must be told. The professional services of medical men are at a discount. Why? Because a canker has been allowed to lower the dignity, to stifle the energy, and to blight the prospects of 95 per cent. of the members of the medical profession. It is not a foreign foe; it exists within our own walls; it stimulates the growth of blacklegs; it is to-day the primary cause of our weakness as a fighting force for adequate remuneration and honourable terms of service. All our external enemies in comparison therewith are as one drop to the ocean. It is a filthy unbrotherly thing—*it is monopoly*. I refer to monopolied appointments, only acted on by about 5 per cent. of our professional brothers, on hospital staffs, as public vaccinators, as post office doctors, as police doctors, and as Poor-law (outdoor) medical officers. These monopolies render the professional life of about 95 per cent. of British medical men akin to the life of that extra-select Dresden china soul—*the shop-walker*. My pleas are that every medical man should be entitled to become attached to the staffs of the hospitals in his area of practice—either in a visiting or in an acting capacity—and that all the other monopolied appointments referred to should be embraced within the working of the National Insurance Act.—I am, Sir, yours faithfully,

ÆNEAS HENDERSON, M.B., C.M. Glasg.

Southport, August 25th, 1912.

To the Editor of THE LANCET.

SIR,—It is of the utmost importance that the national campaign against tuberculosis should be launched on right lines. To use the machinery of the office of the local medical officer of health may be the easiest course, but it is not the best one. Agreed, consumption is an infectious disease, but it cannot, therefore, be dealt with in exactly the same way as other notifiable diseases; and the medical officer of health, already overworked, is not of necessity an expert on diseases of the chest.

What is required is a whole-time tuberculosis officer, who is a recognised expert, to act as consultant in friendly coöperation with the local family practitioner in the combat with this scourge. That clearly is the proper line of attack, and not the relegation of the whole matter to a department which, important ally though it be in improving the public health, is, in the matter of tuberculosis, in many instances out of touch with the actual treatment of patients. Medical officers of health may be experts in diagnosing infectious diseases in the ordinary acceptance of that term, but the fact that tuberculosis has recently (and rightly) been included in the list by official decree does not endow this important service with a special training in diseases of the chest. They cannot become specialists in a moment. Efficiency in this matter can only be attained by separating the duties of

the tuberculosis officers from those of the medical officers of health. I am, Sir, yours faithfully,

J. WEBSTER WATTS,
Secretary, National Medical Union.

Manchester, August 30th, 1912.

To the Editor of THE LANCET.

SIR,—The letter in your columns of August 24th by "D.P.H." ventilates a grievance which I am afraid will be generally felt when the newly appointed tuberculosis officers commence their duties. I refer to the usurpation of the post of "chief tuberculosis officer" by medical officers of health.

If one looks carefully at the advertisements of these appointments one will notice that the word "chief" is carefully avoided. The position is called "tuberculosis officer," or "tuberculosis medical officer," and it is stated that the man appointed shall work under the administrative control of the medical officer of health. So far these appointments have chiefly been for counties, and I question very much whether many of our present county medical officers have had any real practical experience in tuberculosis. Nevertheless, with the greatest calmness, they quietly arrogate to themselves the duties, if not the title, of *chief* tuberculosis officer. Incidentally, more than one medical officer has hinted that he will expect a rise of salary for the increased duties.

I recently received a letter from a medical officer of health for one of our cities in which he said: "We M.O.H.'s must be very careful that we do not miss any of the good things that may be going under the sanatorium benefit section of the Insurance Act." That, I am afraid, is the point of view which is being taken by many medical officers of health. Another medical officer of health—this time of a county—said to me the other day: "Of course, the tuberculosis officer will eventually become practically the assistant of the medical officer of health. My committee do not in the least understand the working of the sanatorium benefit question and are leaving the matter entirely in my hands, and I certainly intend to have the tuberculosis officer as a subordinate official."

This, I am convinced, is not the position as conceived by the Departmental Committee, and, in addition to lowering the status of the tuberculosis officer, it tends to make one more junior official, with consequent greater competition for the senior posts. Already we see how the medical officer of health is chief school medical officer, although he in many cases does none of the work. This necessitates the appointment of an assistant school medical officer, who, unless very fortunate, has little chance of rising to a position of real responsibility. Is the tuberculosis officer also to fall into this category?

I candidly admit that in towns it may be necessary for the medical officer of health to have some control over the tuberculosis activities in order to avoid duplication of work, unless he be prepared to hand the matter over entirely to a chief tuberculosis officer, which I am afraid few medical officers of health will feel inclined to do. In a county, however, the question is entirely different. In few, if any, counties does the county medical officer of health at present do any real tuberculosis work, and therefore there will be no likelihood of clashing of interests. Surely in counties, at any rate, the tuberculosis officer should be really *chief* tuberculosis officer, and responsible only directly to his committee without the "administrative" intervention of the medical officer of health. No doubt the rush and scramble to get sanatorium benefit into working order has given the medical officer of health a great advantage, in that, lacking the services of a competent tuberculosis expert, the responsible committee has been compelled to accept the services, as adviser, of the medical officer of health. We can only hope that as sanatorium benefit gets into working order these positions may be straightened out.

I am, Sir, yours faithfully,

August 24th, 1912. FAIR PLAY.

To the Editor of THE LANCET.

SIR,—The interests of the health of the community and those of the medical profession—the two being indissolubly connected—are of far more importance than the interests of any one party or any one individual whoever he may be. I am a Liberal, have always and shall always vote Liberal, but that is no reason why I should agree *in toto* with whatever a Liberal Government may do. Besides, the Tory party are no more to be trusted to do us justice. They have not opposed the Insurance Bill in the open, but resort to backstairs methods of opposition. After all that has been said and printed about the medical benefits, it is a waste of time to repeat the arguments. But if anyone cannot see that the degradations of contract practice are perpetuated, extended, and stamped with Government approval by the Act, and how injurious it will be for the public and the profession, one can only conclude that he either has not considered the question thoroughly, or has a poor opinion of the status of his profession, or is influenced by whole-hog party bias (or perhaps nationality bias, as the signatures of certain of your correspondents would suggest). The amount of remuneration is not the only question, as some apparently think, although that is a very important matter if the status of us individually is to be considered. As the quotation from a New York paper by Bristolian in THE LANCET of August 24th says, surely our duties are as important and onerous and should be compensated at least to the same extent as our legislators consider their own services to the community are worth.

I am, Sir, yours faithfully,

August 31st, 1912. CIVIS.

OPERATIONS FOR THE REMOVAL OF TONSILS.

To the Editor of THE LANCET.

SIR,—Since there is at the present time considerable difference of opinion as to the best method of operating on the tonsils, a brief statement of the question may be of interest and may serve to elicit the views of others.

I do not propose to go into details of the many methods, and modifications of methods, of operating, but to confine myself to the general question of guillotine *versus* enucleation. Now the first question that arises is: Is it necessary or advisable to remove the entire tonsil? We know little that is definite of the function of the tonsils, though it is generally presumed that they form a barrier against the invasion of micro-organisms; harbouring, as they do, a number of bacilli, the toxins from which are absorbed into the circulation, it is possible that they act as agents for the production of immunity. However, there is no proof that the complete removal of the tonsils is followed by a lessened resistance to disease, while, on the other hand, it is quite certain that unhealthy tonsils favour the entrance of micro-organisms into the body, and that a cervical adenitis will frequently subside after their removal. Tonsils are removed for various reasons: in a large class of cases, especially in children and when associated with adenoids, because their enlargement causes mechanical obstruction; in others on account of chronic or recurrent attacks of follicular tonsillitis or of quinsy; and in a third class to remove a source of infection, as in cases of enlarged glands in the neck. As the follicles extend into the deepest part of the tonsil, it is obviously necessary to remove it entire when these are infected; slicing the tonsil only tends to produce cicatricial contraction at the openings of the follicles and often makes the condition worse instead of better. Similarly, it is only by complete removal that we can extirpate the supratonsillar fossa and obviate the possibility of further quinsies. I should therefore answer the question by saying that complete removal is necessary whenever removal is indicated, except in cases of simple enlargement causing mechanical obstruction, and that even in these it is advisable, for it appears to do no harm, and trouble sometimes occurs subsequently in the stumps of such tonsils if only partially removed. Bleeding is less severe when the section is made through the loose areolar tissue outside the tonsillar capsule than when the vessels are cut across within the substance of the tonsil.

The second question is: Should we employ the guillotine or enucleation? There are three principal types of tonsil: (1) that of which the superficial portion only is markedly enlarged; (2) the tonsil of which the deep part buried in the palate is enlarged—it may, or may not, be adherent, and the superficial portion may be hypertrophied or quite small; and (3) the tonsil which, though small, is chronically infected. Now it is difficult to lay down precise laws on matters of technique, for a method which gives good results in one

surgeon's hands may be unsatisfactory in those of another, but it can nevertheless be stated absolutely that a large majority of tonsils can be completely removed in their capsules, and including the supratonsillar fossa, with the guillotine, sometimes in one bite and sometimes with a second application of the instrument. It must further be pointed out that enucleation, at any rate as frequently practised, demands anæsthesia to the degree of complete relaxation, that an operation on the throat accompanied by hæmorrhage under such complete anæsthesia is by no means a trivial one, and that, as Sir Felix Semon pointed out in a recent discussion, the severity of an operation should be proportionate to the severity of the condition for which it is undertaken. In practically all cases of simple enlargement in children the tonsil can be completely removed with the guillotine, and even embedded tonsils can be entirely shelled out by this method provided that the deep portion is not very adherent, a point which can be determined by making the patient gag or by retracting the anterior pillar with a probe. The tonsils which cannot be efficiently treated by the guillotine, and which should be enucleated, are those surrounded by dense adhesions, and especially those small, friable tonsils which are the seat of chronic follicular tonsillitis and full of caseous secretion. It need hardly be said that these are not the easiest cases in which to perform enucleation. I myself am strongly of the opinion that enucleation should not be employed as the routine method of removing enlarged tonsils in children, which after all form the large majority of tonsil cases. Nevertheless, we owe a great debt of gratitude to the advocates of enucleation, not only for perfecting a very satisfactory method of treating that minority of cases in which the guillotine is inefficient, but even more for pointing out the bad results which may follow from slicing off the superficial portion of the tonsil and for thus promoting a more thorough and efficient use of the guillotine.

I am, Sir, yours faithfully,

Wimpole-street, W., August 27th, 1912. HAROLD BARWELL.

FATAL POISONING DUE TO PICRIC ACID USED AS DUSTING POWDER FOR A BURN.

To the Editor of THE LANCET.

SIR,—With reference to the article in the *South African Medical Record* of July 13th, referred to in an annotation in THE LANCET of August 17th, would you be so kind as to allow me to state that picric acid is not included in any first-aid outfit supplied by the St. John Ambulance Association, and that the individual who described himself as an agent of this association had no authority to do so either from this office or any of its South African centres or branches. I have received from South Africa a full report of the circumstances.—I am, Sir, yours faithfully,

HERBERT C. PERROTT, Chief Secretary.

St. John's Gate, London, E.C., August 20th, 1912.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

Sanatorium Benefits in Liverpool: The Local Subcommittee Working under Difficulties.

A TEMPORARY difficulty has arisen in the effort being made in Liverpool to put into operation the sanatorium benefits of the Insurance Act. The scheme, which was originally propounded by the sanatorium subcommittee of the Local Insurance Committee, provided for the utilisation of the Consumption Hospital in Mount Pleasant as a central tuberculosis dispensary, and the creation of two branch dispensaries, one in the north end and another in the south end, for which the subcommittee had in view eligible sites. Details of the scheme were forwarded to the Insurance Commissioners, but the reply of that body was that no arrangements could be entered into before Jan. 15th next beyond what were purely provisional. In these circumstances the subcommittee has been compelled to stay its hand. The subcommittee felt that to buy, or even to rent on lease, buildings, and to fit them out as tuberculosis dispensaries, with the bare possibility of having to submit an alternative scheme at the beginning of next year, would be too much like a leap in the dark to be worthy of serious consideration. Thanks to an arrangement which is on the point of being concluded with the authorities of the Consumption Hospital, it will be still possible for the persons insured under the Act to avail themselves of sanatorium benefits until a more permanent and far-reaching scheme can be established early in 1913. It is proposed that the Consumption Hospital should be used, not as a sanatorium, but as a tuberculosis dispensary, where the patients' condition may be diagnosed, and where medical men, expert in tuberculous diseases, will prescribe ameliorative methods, which may take the form either of home treatment or treatment in a sanatorium. In the latter event the patient will be removed to the corporation hospital at Fazakerley, which is well adapted for work of this kind. It is not intended that the scheme should clash with or in any way trench upon the ordinary work of the Consumption Hospital, so that the fact that the expenses of the new patients will be defrayed out of other funds should not affect the inflow of charitable subscriptions which the hospital has in the past relied upon in consideration of its beneficent operations. Having regard to the limitations imposed upon them by the provisional requirements of the Insurance Commissioners, the feeling of the subcommittee is that for the present, in fairness to those who have made financial sacrifice, their work should be restricted, as far as possible, to persons who are insured under the Act.

The Liverpool Infectious Hospitals and Bed Isolation.

In the medical officer of health's annual report on the work of the Liverpool city hospitals, Dr. C. Rundle, the medical superintendent of the Fazakerley Hospital, says that in the light of the very satisfactory results obtained at Fazakerley by the system of bed isolation, it would appear that the practice of rigorous asepsis on surgical lines has a value equal to, or greater than, that of any accepted methods of separation by artificial barrier. The treatment of epidemic diarrhœa by subcutaneous injections of sea-water is also commented on by him.

Sept. 2nd.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Highland and Islands Medical Service.

THE Highlands and Islands Medical Service Committee sat at Kirkwall on August 26th. Sir John A. Dewar, M.P., in the chair. Medical practitioners and other witnesses gave evidence as to the difficulties to be overcome in providing efficient medical attendance for the comparatively well-populated islands, widely separated by seas, often dangerous to navigate. Few of those islands, even when constituted a parish, can offer a sufficient income to retain the services of an efficient doctor, even although, as the committee was assured, the Orcadian is always anxious to pay what fees he can. The residences available for medical men were also very unsatisfactory. The fact that the medical man in those latitudes is so migratory is regarded as highly detrimental to the public welfare; but the remedy is not easy, for the parish funds are in most cases already overburdened. Women doctors had been tried, but the monetary considerations were no more satisfactory to them than to men, while the conditions of life were too severe for them, and in certain cases the people had not had confidence in them. Several of the witnesses spoke strongly in favour of having trained nurses, more particularly in the less accessible parts, and of having such places in telephonic communication with the doctor. Evidence was given regarding a system of medical clubs in use in some of the parishes, and of the changes, mainly for the better, that have taken place in the health of the people during the last few years; also of the diminution in the death-rate from pulmonary tuberculosis. Conscientious objectors to vaccination are, however, in evidence here as in other places, and to such an extent that less than half the infants are nowadays vaccinated. The witnesses examined were Dr. R. P. Heddle, medical officer of health of Orkney; Mr. B. D. C. Bell, medical officer of health of Kirkwall; Dr. G. Sinclair, Kirkwall; Dr. A. Lees Low, Stromness; Dr. W. Park,

Sanday; Dr. M. L. McNeill, Holm; Mr. Johnston of Coubister, Orphir; Mr. Tulloch, Eday; Mr. Gibson, Rousay; and Mr. Garrioch, Rendall.

Banffshire Doctors and the Insurance Act.

On August 29th a meeting of the Banffshire Provisional Medical Committee was held in Keith. The honorary secretary stated that all the 29 medical practitioners in the county, also two whole-time men, had signed the complementary pledge, and all who held contract practice appointments had placed their resignations in his hands; that none had accepted seats on the Provisional Insurance Committee or otherwise acted contrary to the declared policy of the profession, and four of them had declined nomination for seats on the Provisional Insurance Committee. The working of sanatorium benefit and the question of remuneration for domiciliary attendance was discussed, and the meeting unanimously agreed to attend insured persons suffering from tuberculosis, subject to approval of any regulations that may be made by the Insurance Committee, and on the following terms: (*a*) Reports 5*s*. (exclusive of visit or consultation); (*b*) consultation at surgery 2*s*. 6*d*.; (*c*) visit 2*s*. 6*d*. within burghs, or within one mile of doctor's house, plus mileage 1*s*. a mile (outward) beyond that; (*d*) injection of vaccine 2*s*. 6*d*. (vaccine to be at the expense of the administrative authority and the fee for injection of vaccine to be additional to the fee for visit or consultation). The meeting also unanimously resolved strenuously to resist any attempt being made by the Insurance Commissioners to get behind the general practitioners in the performance of the above work. It was also resolved that it be an instruction that, should anyone be asked by the Insurance Committee to do the work for less remuneration, information be at once sent to the honorary secretary, and that he at once report the occurrence to the Scottish Medical Insurance Council.

Infant Mortality and Tuberculosis in Dundee.

In his annual report Dr. C. Templeman, medical officer of health of the city, discusses the high infantile mortality in Dundee, which is higher than that of any of the other large towns. The total number of deaths in children under 5 years of age was 939, the number who died in the first year of life being 668. Calculated on the number of births during the year the infantile mortality was 154 per 1000 births. Prematurity and debility at birth come first as a cause of death, then diarrhœal diseases, and, thirdly, bronchitis and pneumonia. With regard to the causes of the high infantile mortality, poverty and the fact that in Dundee so many of the mothers worked in factories (the latest census showed that 23·4 per cent. of the married women of Dundee followed remunerative occupations) were the most potent, and also the fact that many of the mothers are so ignorant or indifferent to the simplest rules of hygiene and proper feeding. Dr. Templeman remarks on the house-fly as a fruitful source of infection in typhoid fever, also on the dummy-teat or dirty crust so frequently thrust into an infant's mouth. He regards as a menace to health the growing number of "conscientious objectors" to vaccination. During the year July 1st, 1910, to June 30th, 1911, only 39 per cent. of the surviving children born during that period are registered as being vaccinated. The death-rate during the year from pulmonary phthisis was 16·783 per 10,000 of the population, the deaths being mainly among members of the working classes, and occurring mainly at the age when the wage-earning capacity was at the maximum. Along with Mr. Newlands, H.M. Inspector of Factories, Dr. Templeman had prepared a return showing the mortality from different causes in the various departments of the jute works of the city, and it was found that the mortality from consumption in persons over 14 years of age was greater by 6 per 10,000 among jute workers than the mortality from the same cause at the same age in all the rest of the city.

The late Dr. Andrew Wilson.

The death has occurred of Dr. Andrew Wilson, at the age of 60, at North Berwick on August 25th. He was born in Edinburgh, educated at the Dollar Institution, Edinburgh Royal High School, and Edinburgh University and Medical School, where in 1876 he was appointed lecturer on zoology and comparative anatomy. Afterwards he was editor of *Health* and examiner in the Faculty of Medicine for the University of Glasgow. He was also lecturer on physiology and health to the George Combe Trust, and Gilchrist Trust lecturer. Dr. Wilson was a prolific writer in popular style upon scientific subjects.

Aberdeen Royal Infirmary.

At a meeting of the directors of the Aberdeen Royal Infirmary, held on August 26th, Dr. A. H. Lister, who has been an assistant physician in the infirmary since March, 1897, was appointed a physician.

Sept. 2nd.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Report of the Local Government Board.

THE annual report of the Local Government Board for Ireland for the year ended March 31st, 1912, which has just been published, contains particulars concerning the administration of the Poor-laws and the public health work of the country. It is stated that on March 30th, 1912, there were in workhouses in Ireland 38,100 persons. Of these, 14,735 were in hospitals or infirmaries, 10,956 were aged or infirm, 2313 were lunatics, idiots, or epileptics, and 5097 were children under 15. On the other hand, there were 2569 children at nurse or boarded out. 1555 children under 15 died in workhouses during the year, of whom 799 were under one year of age. The total number of deaths in workhouses was 10,084, of which 1445 were due to phthisis. There are still ten workhouses in which there is no trained nurse. There were 652,778 new cases attended by dispensary medical officers under the Medical Charities Act, and there were 77,379 vaccinations or revaccinations performed. The salaries paid to dispensary medical officers amounted to £104,196. There are now 83 unions in which scales of salaries for the medical officers have been adopted. The notification of tuberculosis has been adopted in only 41 sanitary districts. In 284 out of 309 sanitary districts steps have been taken to carry out the provisions of the Dairies, Cowsheds, and Milkshops Order.

The Sanatorium Benefit and the Women's National Health Association.

Public opinion seems to be giving its support to the position taken by the Conjoint Committee of the medical profession in reference to the Women's National Health Association. The county councils who are engaged in inaugurating tuberculosis schemes are indignant to find that the Treasury grants, to which they are entitled, have been docked for the purpose of giving £25,000 to the Women's National Health Association. As the association only purposes to carry on tuberculosis work for the county councils for a period of one year, and very few of the county councils have accepted its offers of help, it is, perhaps, not yet too late for the question of the grant to be reconsidered. In marked contrast with their lavishness toward the Women's National Health Association is the niggardliness of the National Insurance Commissioners in regard to the fees to be paid by Insurance Committees to medical practitioners undertaking domiciliary treatment of persons in receipt of the sanatorium benefit. The Dublin Insurance Committee, after consultation with the local Medical Committee, proposed to allow a fee of 5*s*. for each visit at the patient's home, and of 3*s*. 6*d*. for each attendance at the practitioner's residence. The Commissioners have refused to sanction these fees on the ground that they are higher than the minimum fees suggested by the British Medical Association. Lady Aberdeen, as president of the Women's National Health Association, has met the sanatorium subcommittee of the Conjoint British and Irish Medical Associations Committee, and after a full and friendly discussion it was arranged that three members of this subcommittee should be selected to advise with Lady Aberdeen so as to avoid future friction if possible.

Administration of Sanatorium Benefits.

The secretary of the conjoint committee of the British and Irish Medical Associations has made public the following statement as to the position of the medical profession in Ireland regarding the administration of sanatorium benefits:—

The sanatorium subcommittee of the Conjoint Committee desire to assure the public that the medical profession in Ireland are anxious to give their most hearty coöperation in the administration of the sanatorium benefits, and to take their full share in the prevention of tuberculosis. The chief reason for the resignation of the medical members

of the Irish Advisory Committee was due to the fact that the regulations for the conduct of the sanatorium benefit were far advanced before the medical members of the Advisory Committee were consulted.

The Irish Insurance Commissioners gave the Conjoint Committee a promise that if each local Medical Committee would send forward four names, the two medical members of the Insurance Committee would be selected in each case from these four names. In some instances this pledge was not fulfilled, and in these cases only were the medical members asked to resign.

The subcommittee desire to point out that the regulations for the administration of sanatorium benefit have not yet been issued by the Irish Insurance Commissioners, and that pending the issue of these regulations and definite arrangements under them there is no barrier to the attendance on tuberculosis patients or to the signing of certificates recommending patients for sanatorium benefits. The committee trust all necessary treatment and certificates will until then be readily granted.

Sept. 3rd.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Bequests in Aid of Science.

THE French scientific world has found a benefactress. Madame Jonglart at her death bequeathed 50,000 francs to the Collège de France; 95,000 francs to the Faculty of Science of the Sorbonne, of which 55,000 francs will be devoted to the Zoological Laboratory; 95,000 francs to the Museum; 50,000 francs to the Faculty of Medicine; 70,000 francs to the School of Advanced Studies; 150,000 to be divided between the Geographical and Anthropological Societies and the Association for the Advancement of Science; and, finally, 139,000 francs to various scientific and charitable institutions.

The Transmission of Relapsing Fever.

The Academy of Science, which in spite of holiday-time continues to hold meetings every week, heard on August 26th a communication from M. Nicolle, director of the Pasteur Institute at Tunis, and MM. Blaisol and Conseil, which was read by M. Laveran. The authors have established the fact that relapsing fever is transmitted through the agency of lice, and they have investigated the exact mechanism of this transmission. Numerous microbic diseases can be inoculated by insects, but the part they play is variable. In some cases, as in yellow fever, the suctorial insect (the stegomyia) carries the bacillus from the patient and inoculates his neighbours. In other cases the insect absorbs the bacilli which continue to live in its digestive tract and are later on passed out. In relapsing fever the transmission of the spirillum which causes this disease is brought about by the most complex means. The spirillum taken by the louse from a patient suffering from relapsing fever undergoes in its digestive tract a series of transformations, and becomes a "filtering" micro-organism invisible to the microscope. In this form it traverses the intestinal wall and lodges itself in the general body cavity of the insect, or once again becomes a spirillum. Thus the louse is not of itself contagious; it can bite a man without giving him relapsing fever; but if by mischance he scratches himself, and then crushes the parasite and lets the spirilla which it contains come in contact with an abrasion, he will inoculate himself with relapsing fever.

Congress for the Advancement of Science.

In the Section of Medical Electricity at the Congress for the Advancement of Science, a large number of interesting topics were summarised and brought forward. Notable among these were the accounts of the methods of radiological examination of the alimentary tract by MM. Belot and Aubourg, who demonstrated the various methods of application and dwelt on the importance of good apparatus. M. Belot subsequently discussed the radiography of the wisdom teeth, and regretted that the proofs of these teeth were generally wanting in clearness. MM. Barret and Liven discussed recent reports on dilatation of the stomach and the physiotherapeutic means of treating it. Electrical methods in the treatment of enterocolitis formed the subject of a communication by MM. Laquerrière and Delherm, while M. Bergonié read a paper on the various treatments of stricture of the urethra, and M. Richau discussed the effects of diathermic action upon respiratory exchange. MM. Roger and Labeau described some recent investigations into the radiotherapy of tabes, and M. Donnari showed skiagrams from a case of complete inversion of the organs, the heart and stomach being on the right and the liver and cæcum on the left. Many of the papers in this section were followed by discussions in which a large number of the members took part. The Section of Medicine had before it the interesting work of M. Delanglade on pulmonary surgery, showing that the ruling factor in this special branch of surgery is the presence of the pleura. M. Bernard described the indications for artificial pneumothorax in the treatment of pulmonary tuberculosis, and MM. Balray and Arcelin discussed the value of intrapleural injections in pleuropulmonary affections. M. Georges Vitry contributed a study of the pathology and treatment of muco-membranous enterocolitis, MM. Carrieu and Anglada discussed Wright's reaction in Mediterranean fever, and M. Rendu read a paper on inhalations of hot air in the treatment of diphtheria.

Sept. 2nd.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Reappearance of Cholera and Small-pox.

WITHIN the last few weeks two cases of cholera and one of small-pox have been reported to the Board of Health of Vienna. With respect to the case of small-pox, the amount of attention which it excited was an indication of the rarity of the disease in this country, for since vaccination has been made compulsory in Austria small-pox has become practically extinct. As the belief in authority is, so to say, inborn in the Austrian population, we have only a very small community of anti-vaccinationists who do not venture to deny two facts—namely, the acquiescence in compulsory vaccination by over 90 per cent. of the population, and the nearly complete freedom from small-pox resulting therefrom. The cases of cholera were imported from Constantinople. The outbreak was quickly suppressed, and Vienna is now free from both of these threatening dangers.

Physiological Aspects of Aeroplane Flights.

An interesting account of the physiological problems connected with the use of the aeroplane has been given by Dr. von Schrötter to the Medical Society of Vienna. Dr. von Schrötter, who has also for a long time been engaged in the study of the effects exerted by caisson work and mountain climbing on the organs of the human body, says that for the medical man the main point of interest in aeronautics is the production, so to say, of a new climate. Apart from the strain on the nervous and psychical organs, the sudden change of the pressure of the atmosphere, and consequently of its oxygen component, affects the circulation and the respiration much more than the gradual ascent in mountain climbing does. The powerful draught causes a keen sensation of cold, which is the first symptom complained of, and deafness is very soon experienced in consequence of the altered pressure upon the tympanum; subjective noises, pain in the ears, and diminished acuity of hearing are often persistent. Attempts at protection by plugging the ears are insufficient. The reduced supply of oxygen caused by the rapid movement and the fall of the atmospheric pressure gives rise to unpleasant symptoms of cerebral origin, such as vertigo, vomiting, and visual hallucinations. A dangerous and frequent symptom is the desire for sleep, occurring after some time during flying, in spite of the aviator's strenuous efforts to keep awake. A very unpleasant sensation is that of dizziness caused by the altitude of the aeroplane, the result being that objects on the ground appear to be distorted, displaced, or in rapid unwonted movement, and that the aviator is often at a loss as to his actual position. Perhaps this condition is responsible for inexplicable falls of aeroplanes from a moderate height, the sequence being dizziness, a wrong manœuvre, and finally the catastrophe. The sense of orientation in space is also lost, so that the aviator does not know, for instance, whether he is in the horizontal position or not, especially when he is surrounded by clouds. The late M. Latham told Dr. von Schrötter that on one occasion he was completely bewildered after a few minutes' experience of this kind, and came to the ground without his knowledge. Dr. von Schrötter believes that flying may easily cause a nervous breakdown.

The Gastein Mineral Springs.

The well-known mineral springs at Gastein in the Alps of Salzburg (formerly the private property of the Emperor Francis Joseph) have been sold to the community of Gastein for the sum of 2,500,000 kronen (about £100,000). The Emperor himself ordered the sale at this exceptionally low price notwithstanding much higher offers by private firms, because His Majesty desired to bestow a mark of special favour on the loyal municipality. The baths will be fitted up according to the latest requirements, and the most modern adaptations will ensure the preservation of the radioactive principle of the waters for the benefit of the bathers.

The late Professor von Neusser.

The death of Professor von Neusser has been already mentioned in THE LANCET, but his exceptional eminence as a clinical teacher and scientific observer deserves some further notice. It may be said that his chief mental characteristic was a faculty of exact and keen observation coupled with profound modesty and a marvellous power of intuition. In analysing a patient's case he would show his audience in what it differed from other very similar cases, and would sometimes come to diagnostic conclusions which other physicians would hardly have thought of. His forecasts were usually correct, for in numerous instances in which he made a quite unexpected diagnosis if the illness terminated fatally the necropsy proved him to be right. His lecture-room was therefore a favourite resort of those who admired cleverness and originality in medical ideas. Numerous English and American practitioners were daily attendants at his clinic. As far back as the year 1891 he suspected and pointed out the correlation between the ductless glands, which has come so much into prominence lately, and his lectures on the pathology of the blood were at that time revelations to the bulk of the profession. His death, though long expected ever since he underwent a partial operation for renal cancer, came as a severe shock to all of us. The clinic will be managed temporarily by Dr. Türck, one of his former pupils, and now an eminent hæmatologist, until the future disposal of these wards is decided on, for it is very likely that only the other three clinics, under the control respectively of Professor von Noorden, Professor Ortner, and Professor Chvostek, will continue as at present, and that Professor von Neusser's clinic will be divided up amongst other medical departments.

Sept. 2nd.

THE SEWERAGE OF CAMBORNE (CORNWALL).—The Local Government Board has sanctioned the loan of £24,750 for a sewerage scheme for Camborne.

LONGEVITY IN THE WEST.—The late Mr. Edgar Jones, J.P., M.R.C.S. Eng., who died at Great Burstead, Essex, on August 26th, aged 102, was born in Somerset, and is thus counted as a West Country man. He spent his early years in Bristol, and when qualified he practised for a short time in Brislington, a suburb of that city. His brother was the late Alderman J. Averay Jones, a former mayor of Bristol. Mr. Jones was the senior Member of the Royal College of Surgeons of England, and received a letter of congratulation from the College on the occasion of his 100th birthday on Jan. 5th, 1910.—Deputy-Inspector-General Usher Williamson Evans, M.D. Glasg., who died at his residence at Clifton, Bristol, on August 27th from syncope, was in his ninetieth year. He was born in Ireland in 1823, graduated M.D. of Glasgow University in 1844, and the same year he obtained the L.R.C.S. Irel. He shortly afterward entered the army as assistant surgeon, retiring in 1870 with the rank of deputy inspector-general. He served in the Crimean war, and received the Crimean medal with four clasps, and he was also awarded the Turkish medal. On retiring from the service he went to Ireland until 1876, since which date he resided in Clifton, and by his death Bristol loses one of its oldest and most respected inhabitants. He leaves five sons (three of whom are officers in the army) and two daughters to mourn their loss.—Mrs. Mary Stockham, of Stogursey, near Bridgwater, celebrated the anniversary of her 100th birthday on August 24th. She received a congratulatory telegram from the King.

Obituary.

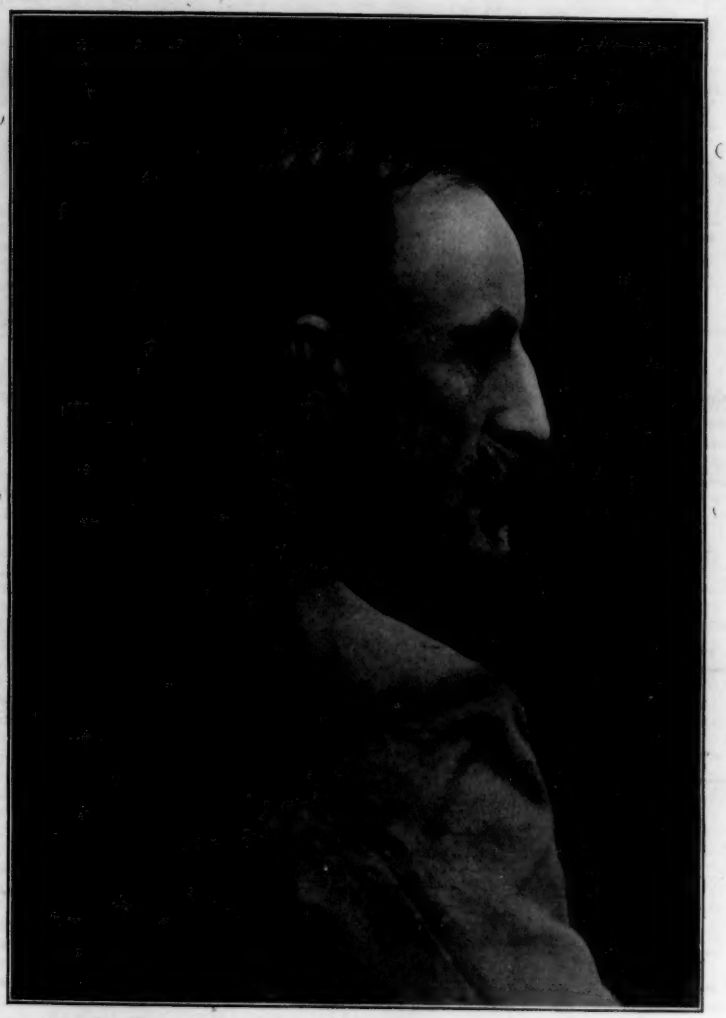
CLINTON THOMAS DENT, M.C. CANTAB., F.R.C.S. ENG.,

SENIOR SURGEON TO ST. GEORGE'S HOSPITAL; VICE-PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Mr. Clinton Dent, whose death on August 26th, after a brief illness, it was our sad duty to record last week, was born at the close of 1850, and was the fourth surviving son of Thomas Dent. He was educated at Eton and Trinity College, Cambridge, and entered St. George's Hospital in 1872. He qualified M.R.C.S. in 1875, and obtained the Fellowship of the Royal College of Surgeons two years later. He did not graduate at Cambridge in the customary way, but in 1899 his University conferred upon him the degree of Master in Surgery, *honoris causâ*, in recognition of his position as a surgeon. Soon after qualifying he was appointed house surgeon at St. George's Hospital, and from 1877 to 1879 he held various teaching posts in the hospital and medical school in accordance with the ideals of education then prevalent in our medical schools. During this period he served as demonstrator of anatomy, surgical registrar, lecturer on practical surgery, joint lecturer on physiology, and demonstrator of operative surgery. In all these capacities Mr. Dent was an unusual figure. He was not at all fluent, he was not always very clear, he had a jerky delivery, frequent pauses over what seemed to many the simplest part either of lecture or demonstration were followed by a rush of words at the most difficult points, while nervous gestures did not help to elucidate the points on which he was dwelling. But, on the other hand, he was a most stimulating teacher. His earnestness, frankness, keenness, and complete absence of self-consciousness appealed strongly to his more thoughtful pupils; they may not have had their path made easy to them by Dent, but they learned how to learn, and how to separate the essential from its coverings. In 1880 he was elected to the staff of St. George's Hospital as assistant surgeon, and he held this appointment for the long period of 15 years, during which time the same individual, sometimes irritating, but always thorough and illuminating teaching was carried on by him in the out-patient department. Many of his patients were very genuinely attached to him, though he never said a word to them with any idea of eliciting gratitude. At length, in 1895, he was promoted to be surgeon, and 12 years later succeeded to the senior surgeonship, which he held at the time of his death. Mr. Dent was thus an active member of the surgical staff of St. George's Hospital for 32 years, and for the last 15 years he was joint lecturer on surgery in the medical school, in which office he preserved to the end his individual methods.

Mr. Dent held important offices in the Royal College of Surgeons of England. He was Hunterian Professor in 1908, and was a member of the Court of Examiners from 1902 to 1911. In 1903 he was elected on to the Council of the College, and was re-elected in 1911. In 1912 his colleagues of the Council chose him as joint vice-president, and he held this post when he died. He had also been an Examiner in Surgery at the University of Cambridge, and was president of the Surgical Section of the Royal Society of Medicine. He was for some years a member of the surgical staff of the Belgrave Hospital for Children, and was appointed consulting surgeon when he retired from the active service of the institution. In 1904 the chief surgeonship to the Metropolitan Police fell vacant and Mr. Dent was chosen to fill the post. This appointment proved most congenial to him, and he took a keen interest in all matters relating to the health of the force. In the course of his police work he made a close study of the after-effects of injuries received by constables whilst on duty, and earned thereby the gratitude of the splendid force under his supervision.

Mr. Dent made many contributions to medical literature. Early in his career he translated and edited Billroth's "Clinical Surgery," and he was the author of "Nature and Significance of Pain," and joint author of articles on "Ankylosis," "Ligatures," &c., in Heath's "Dictionary of Practical Surgery," and of "Traumatic Insanity" in Tuke's "Dictionary of Psychological Medicine." He also contributed articles on "The Behaviour of a Tendon Ligature," "On 400 Cases of Amputation," "Address on the Wounded in War," to the Transactions of the Royal Medical and Chirurgical



CLINTON THOMAS DENT, M.C. CANTAB., F.R.C.S. ENG.,
VICE-PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND; SENIOR SURGEON TO ST. GEORGE'S HOSPITAL.
(Reproduced from a photograph by Messrs. Elliott and Fry.)

Society. There is no doubt that he could have made a far greater mark as an author if he had been less impatient of the actual labour of composition, for he had a comprehensive grasp of the theory and practice of surgery, intimate knowledge of several special branches, and a thoroughly original mind. At the outbreak of the South African war in 1899 he went to Natal as a civil surgeon and medical correspondent, and sent home valuable communications on gunshot wounds and military surgery in general, but he procured much more material for publication than ever appeared in the medical journals.

In all he did, work and play alike, Mr. Dent showed the same whole-hearted energy and activity. He was both a student and a man of action, and his strongly marked personality left its imprint on everything and everybody around him. In his younger days he was famous as an Alpine climber, and his name and exploits are familiar to all mountaineers. He joined the Alpine Club in 1872, was elected to the committee in 1874, was secretary four years later, vice-president in 1884, and president from 1886 to 1889. His "first ascents" are part of the history of Alpine climbing, and his pioneer work in the Caucasus in the "eighties" earned him fame as an explorer. He wrote many papers on mountaineering, and published in 1885 a charming book, "Above the Snow Line," while the volume of the Badminton Library on Mountaineering appeared in 1893 under his able editorship. During his climbing days he took many delightful photographs of Alpine scenery; he was an expert amateur photographer, with a keen eye for natural beauties and good artistic judgment. To St. George's Hospital Mr. Dent's death, after a brief illness and while working at his highest level of efficiency, is a sad loss.

SIR WILLIAM JAPP SINCLAIR, M.A., M.D. ABERD., M.R.C.P. LOND.,

PROFESSOR OF OBSTETRICS AND GYNÆCOLOGY IN THE UNIVERSITY OF MANCHESTER; PHYSICIAN TO ST. MARY'S HOSPITALS, MANCHESTER.

Sir William J. Sinclair, whose death was recorded in THE LANCET of last week, was born at Laurencekirk, Kincardineshire, in 1846, the son of Alexander Sinclair of that town. He was educated at Aberdeen Grammar School, and at the University of Aberdeen, where he obtained the M.A. degree in 1869 with honours in natural science. In 1873 he qualified M.B., C.M., with highest honours, and two years later he received the M.D. degree. After holding a resident appointment at the Aberdeen Royal Infirmary, he went to Manchester at the age of 28, and as resident medical officer began his long connexion with St. Mary's Hospital for Women and Children in that city. In 1875 he went to Vienna for a course in gynæcology and obstetrics. Returning to Manchester he started in private practice, and was appointed physician to the Manchester Southern Hospital for Women and Children, which was amalgamated with St. Mary's Hospital about eight years ago. In 1883 he succeeded Dr. Cullingworth as professor of obstetrics and gynæcology in Owens College, and was subsequently appointed professor in Victoria University. He obtained the Membership of the Royal College of Physicians of London in 1892.

Sir William Sinclair was for a long time a member of the Central Midwives Board and an honorary Fellow of several British and foreign obstetrical societies. He was a past president of the North of England Obstetrical and Gynæcological Society and of the Manchester Medical Society, and had been examiner in midwifery and medical jurisprudence at the University of Aberdeen. He wrote much on his special topics and for some years was joint editor with Dr. James Niven of the *Medical Chronicle*, while he took a prominent part in the founding of the *Journal of Obstetrics and Gynæcology of the British Empire* ten years ago. In 1888 he published "Gonorrhœal Infection in Women," and recently "Semmelweis: His Life and Doctrine." His writings were marked by freshness of treatment and vigour of thought. Among his valuable contributions to our own columns may be mentioned one on "Ten Successful Cases of Cæsarean Section" in 1901, and a paper on the effects of ventrifixation in 1908.

We print the following appreciation from a colleague: "In Sir W. J. Sinclair Manchester loses one of its prominent figures, a man known to many circles, and who has taken part in many movements. His activities were many sided. A scholar, a politician, a humorist, a thinker, an organiser, a physician of ripe experience and excellent judgment, and a writer of rare felicity, he united in himself many great qualities, which indeed to some extent interfered one with the other. What, perhaps, is still more unusual, he joined the tendencies of the fighting man with strong affections and a considerable tenderness of heart. His whole life was a struggle with adverse circumstances, and to this, coupled with a tendency to bad health, may be ascribed the mordancy of his temperament. But he had the gift of intellectual honesty, which broke through all impediments of expediency, and exposed him at times to much unpopularity, though the future might prove him to be right. In his many contributions to medical literature he had a singular gift for detecting the things that matter and expounding them in a lucid and masterly manner, and for placing previous discoveries in a fresh and striking light. One would refer especially to his work on gonorrhœa, and to his exposition of the principles which guided Semmelweis in his campaign against puerperal fever. But his greatest achievement was the part he took in preparing the rules of the Central Midwives Board. He put much energy and thought into the launching of the *Medical Chronicle*, a journal which has played no inconsiderable part in sustaining a high level of medical effort in Manchester. He will be remembered for the range of his knowledge of languages, for he was well versed in Latin, Greek, German, French, and Scandinavian. He was also a master of English style, terse, direct, vigorous, and always clear. Above all one likes to think of him as a man, with some defects, who was virile, generous, warm-hearted, and whose instincts were on the side of truth and progress."

The medical profession has lost in Sir William Sinclair an erudite and brave exponent of science, and the practical midwifery of this country owes him a heavy debt. He carried the brusqueness which had been an element in his success in private practice into all his public relations, and was distinctly a difficult man. But those who differed from him were unanimous in respecting him alike as an honest adversary and a learned man.

JOHN THEODORE ABBOTT, F.R.C.S. IREL.

Mr. John Theodore Abbott, of Tunbridge Wells, who died on August 4th at the early age of 46 years, came of an old Irish family settled in co. Tipperary since the time of Cromwell. He was a son of the late Surgeon-Major Abbott, of the Army Medical Service, and was educated at Bedford and Trinity College, Dublin. He qualified in 1887, taking the L.R.C.P. Irel. and L.M. In 1899 he became in addition an F.R.C.S. Irel. After a brief period in London Mr. Abbott settled over 20 years ago in Tunbridge Wells, and speedily by his skill, kindliness, and personal gifts built up an extensive practice. He was a keen surgeon, one of the earliest motorists in England, and an able member on the council of the Irish Medical Graduates Association. He was never, however, very strong physically, and the tax of a heavy practice told upon him severely at times. Failure of health dictated his resignation from the town council and other public bodies in which he was interested. The news of his unexpectedly sudden death came as a great shock to a large circle of friends. He leaves a widow and one son.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Oscar Eversbusch, professor of ophthalmology and director of the eye clinic in the University of Munich, aged 59. He studied in Berlin, Bonn, Strasburg, and Tübingen. He was afterwards assistant in the Munich eye clinic under Professor Rothmund, and besides being *privat-docent* of ophthalmology in the service he was lecturer on comparative ophthalmology in the veterinary school. In 1886 he was appointed to the chair of ophthalmology in the University of Erlangen, from which he was transferred to the corresponding chair in the University of Munich in 1900, succeeding his old teacher, Professor Rothmund. He published many separate papers on ophthalmological topics, some of the most notable dealing with the connexion between eye and mental or cerebral affections, and on the occurrence of eye disease in childhood. He also contributed articles on ophthalmological topics to Penzoldt and Stinzing's "Handbook of Therapeutics" and to Schwalbe's "Manual of

Technical Treatment." In Graefe and Saemisch's large "Manual of Ophthalmology" he wrote the portions dealing with the relations between eye diseases and those of the nose and ear.—Dr. Gustav Lindner, the senior surgeon-general in the German army, aged 92. He took part in all three of the last Prussian campaigns, and was decorated during the Franco-German war with the Iron Cross.—Dr. M. Waber, of Gratz, staff surgeon-general. — Dr. Schönfeldt, an eminent Russian alienist, was fatally assaulted by an insane patient in Riga. He was 51 years of age.—Dr. Andomaki, of Salonika, a victim of political riots.—Dr. Julius Siklóssy, senior *privat-docent* of ophthalmology in the University of Clausenburg, after a long illness, aged 44. He was the son of the late Professor Siklóssy, who occupied the chair of ophthalmology in the same university.—Dr. Pedro Visca, professor of clinical medicine in the University of Montevideo.—Dr. Maurice H. Richardson, professor of surgery in Harvard University. — Dr. H. Gibbes, formerly professor of pathological anatomy in the Ann Arbor University of Michigan.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

A New Disease Occurring among Soldiers.

IN Temesvár, where the Seventh Army Corps is holding its manœuvres, the military surgeons are perplexed by a remarkable disease which has never before been observed in any part of Hungary. The attacks begin with giddiness, after which the patients soon fall asleep, and in three or four hours wake up complaining of drowsiness and headache. In one or two days they recover entirely. It is peculiar that this affection does not occur, as might have been expected, after an exhausting march or other bodily strain, but it comes on during rest or meals or while the men are in camp. The hygienic conditions in this district are excellent, fresh water, pure air, and good food being available in every part of it.

A New Hungarian University.

The question of the third Hungarian university is finally settled. The new institution will be established in Pressburg (Pozsony), where it will not only possess importance as an educational centre, but will also have some effect in counterbalancing the German influence which is exerted by the nearness of Vienna. There was a great competition between Debreczen and Pressburg for the honour of being the seat of the third university. The former town offered 10,000,000 kronen and a free site for the buildings to be erected, but the Minister of Public Instruction preferred to be guided by the national point of view and consequently decided in favour of Pressburg. The people of Debreczen, being deeply moved by this disappointment, appealed to His Majesty the King, who intervened, and the result is that Debreczen has been promised that the fourth Hungarian university shall be located there, with the restriction, however, that it shall for the time being have no medical faculty on account of the heavy expenses which the State has to meet in connexion with this particular department. Public instruction in Hungary is mostly gratuitous, such fees as the students may pay being only nominal and not sufficient to cover even the wages of the servants employed in the schools. To give an idea how expensive a medical faculty is for the State, it may be mentioned that in the University of Kolozsvár (the second university in Hungary) every single medical student costs the State about 2500 kronen (£108) per annum.

A Title of Nobility for a Surgeon.

His Majesty King Francis Joseph has conferred upon Professor Emanuel Herczel the rank of a Baron with remainder to his descendants. Professor Herczel was already in possession of the title of Hofrath, which he received two years ago when he performed appendectomy on the Archduke Joseph and on Baron Tchérváry, then Minister of War.

Implantation of Hair.

Dr. Székely Ferencz, a Budapest practitioner, has devised a method by which hair can be implanted into the scalp of bald-headed persons. The process requires medical knowledge for its successful performance, and it is moreover very interesting from a scientific point of view. The method and the instruments required for the purpose of implanting the hair have been patented in all countries in which inventors have protection, which goes to prove the originality of both the method and the instruments employed. In Germany, however, the Patent Office declined to grant patent rights before the invention had been investigated by a committee of experts, and Dr. Székely had to travel to Berlin, and demonstrate his method before the committee, consisting of Germany's leading dermatologists, who, in the result, presented so favourable a report that the patent rights were granted. In carrying out the process the scalp is first carefully cleansed and then anæsthetised with a solution of novocaine, after which the operation can be begun. The operator uses a number of small hooks, made of gold wire, and in the eyelet of each hook a doubly folded hair is inserted. The hook is then pushed into the scalp with the aid of a Pravatz needle, of which from 300 to 400 are in readiness all prepared with hook and hair, and, of course, thoroughly sterilised before use. When the needle has been pushed into the scalp it is turned at a right angle and then pulled out, leaving the hair under the skin fastened by the outstanding end of the hook. As at one sitting not more than from 300 to 400 hairs can be implanted, a full head of hair requires from 25 to 40 sittings, assuming that from 10,000 to 20,000 hairs will cover a head. If the hairs are somewhat long then considerably fewer are necessary, because in this case it is sufficient to implant several hundred hairs around the parting, and these long hairs are combed across the scalp so as to cover the bald surface. After the sittings there is very little reaction on the scalp, and even that disappears after one or, at most, two days. Of course, every precaution must be taken to ensure perfect cleanliness and antisepsis. As to the frequency of sittings, Dr. Székely says that sometimes he is able to apply the treatment every alternate day. If there is some inflammation around a hair this hair is pulled out, whereupon the inflammation promptly ceases.

August 28th.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Infant Mortality.

THE third report on infant mortality, prepared by Dr. Helen MacMurchy, Toronto, for and under the instruction of the Ontario Government, has recently been issued. The report is illustrated, showing slum conditions in some of our cities, gives details as to newspaper propaganda, contrasts prevailing conditions in other countries and cities with our own, and gives a great deal of valuable information relative to the subject. In Ontario in 1909 out of a total of 52,629 deaths there were 6932 deaths under one year of age, a mortality of 131·7 per 1000. In Prince Edward Island for the year ending May 31st, 1910, the total number of deaths registered was 954, and the number under 3 years of age, 142. New Brunswick does not keep complete returns. The infant mortality in Nova Scotia is about 111 per 1000. In Quebec, out of every 1000 children born in the city of Montreal in 1909, 290 perished in the first year. In 1910 the infant mortality in Manitoba was 149 per 1000; for Saskatchewan 129·49 for 1000 births; Alberta, total deaths, 1909, 2662—no information kept as to infant mortality; British Columbia, total deaths, 1910, 3221—no returns for infant mortality recorded. Toronto registered 7848 births in 1909, and the deaths under one year of age in that year number 1727. Ottawa came next with 545; Hamilton, 296; London. 175. To combat infant mortality Dr. MacMurchy suggests effective education by the government, the municipality, the school, and the medical profession; a proper, efficient, and complete registration of births, and a fee of 25 cents to the first person registering one within 24 hours; the provincial government to pay one-third of the salary of medical man or nurse exclusively employed in infant welfare work; the provincial government to make a special grant of 14 cents per diem to the mother nursing her infant in any institution, and 7 cents per diem to all doing this in outside institutions; and lastly, the establishment of a bureau of infant care and management.

Typhoid Fever at Ottawa.

Ottawa, the seat of the Federal Government of the Dominion of Canada, is again being visited with a severe epidemic of typhoid fever. This is due to the contamination of the water-supply. A little over a year ago a similar epidemic occurred, when there were 1600 cases of the disease with about 80 deaths. Up to the first of August there were nearly 700 cases in the present epidemic, but the condition of the water having been somewhat improved, there has been a slight falling off in the daily reports of cases. Still, it is expected that the total will reach 1000 cases. The provincial health officer has been investigating, and if the Ottawa authorities do not make prompt and efficient plans for an immediate safe water-supply it is threatened by the provincial board of health with a daily fine of $100 under the Ontario Health Act. Municipal intrigue and politics of the ward variety are said to be the cause of failure on the part of the municipal authorities to provide a proper filtration plant as suggested by the provincial health officer. The Dominion Government is becoming alarmed at the situation. They have 5000 employees in the various departments, and as a session of Parliament is approaching members are said to be contemplating an agitation for Parliament to meet in Toronto or some other Canadian city for the coming session. The situation has revived the question of the establishment of a Health Department for Canada, to be administered under one of the existing ministers of the Crown, and also of bringing the local governance of the capital under Federal control, similar to the administration of Washington and the District of Columbia by the Federal authorities of the United States.

The Destruction of Flies.

There has recently been manifested in various Canadian cities a keen desire to "clean up." In this connexion several cities have had municipal ordinances passed providing for the covered garbage receptacle. Pamphlets, "dodgers," and circulars have been scattered broadcast, commanding, coaxing the killing of flies. The public press in some cities have conducted commendable campaigns offering prizes of large sums in cash to the boy or girl who killed the largest number of flies. A newspaper in Montreal has conducted such a vigorous campaign that in a very short time something like 15,000,000 flies have been destroyed. Toronto is another city where the battle has been waged with might and main. One boy in Montreal has over half a million to his credit; while in one day in that city over 6,000,000 were brought into the office of this newspaper.

Removal of the Toronto Hospital for the Insane.

Twenty miles east from Toronto the Ontario Government recently purchased for the large institution known as the Toronto Hospital for the Insane a site which comprises several acres, and the work of erecting the institution is now being carried on rapidly. This will leave Toronto without hospital accommodation of this character, and the matter being brought to the attention of the civic authorities, the city will give $100,000 towards establishing a detention hospital for incipient cases of insanity. There is another large institution near the city at Mimico, but it does not admit patients from the city. It is expected that the new detention hospital will meet the full requirements of Toronto.

Ontario Health Officers.

Under the new Provincial Health Act the Province of Ontario has recently divided the province into eight health districts and appointed health officers over each of these. These health officers are now undergoing a course of instruction at the University of Toronto and the Ontario Laboratories. After their course they will be required to pass examinations within one year, which is contingent upon their holding these appointments. An annual conference will be held, and during the present year it will take place in Toronto at the time of the annual meeting of the Canadian Public Health Association, Sept. 16th, 17th, and 18th.

Quebec Quarantine Station.

During the year ending March 31st, 1912, the quarantine station at Grosse Isle, Quebec, had a bad year so far as quarantinable diseases were concerned. Six passenger vessels arrived at that port with small-pox, two with cholera, and one with typhus fever. Two births and seven deaths occurred in the hospital during the year. 367 vessels underwent quarantine, a decrease of 11 from that of the previous year. The total number of passengers examined was 193,313, an increase for that year of 15,146. There were 102 passengers transferred from vessels to the hospital, and infectious disease was found upon all boats with the exception of two.

August 29th.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed the subjects indicated:—

Surgery.—R. V. Martin (Sections I. and II.), St. Mary's Hospital; P. M. Másiná (Sections I. and II.), University College Hospital; J. G. Ogle (Sections I. and II.), Durham; J. E. Robertson-Ross (Sections I. and II.), Westminster Hospital; O. W. D. Steel (Section I.), London Hospital; and B. W. F. Wood (Sections I. and II.), Leeds.

Medicine.—R. Jones (Sections I. and II.), Charing Cross Hospital; R. V. Martin (Sections I. and II.), St. Mary's Hospital; J. G. Ogle (Sections I. and II.), Durham; M. M. Patterson (Sections I. and II.), Royal Free Hospital; J. E. Robertson-Ross (Sections I. and II.), Westminster Hospital; and B. W. F. Wood (Sections I. and II.), Leeds.

Forensic Medicine.—R. Jones, Charing Cross Hospital; J. E. Robertson-Ross, Westminster Hospital; and B. W. F. Woods, Leeds.

Midwifery.—P. M. Másiná, University College Hospital; J. E. Robertson-Ross, Westminster Hospital; R. A. Robinson, Liverpool; O. W. D. Steel, London Hospital; and B. W. F. Wood, Leeds.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—R. V. Martin, P. M. Másiná, M. M. Patterson, J. E. Robertson-Ross, and B. W. F. Wood.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* Dr. Gustav Fritsch, honorary professor and formerly chief of the microscopic department of the Physiological Institute, is celebrating the jubilee of his doctor's degree. His scientific researches and photographs during his journeys in South Africa attracted considerable attention. His travels were commenced as long ago as 1863. Dr. Claus Schilling, of the Infectious Diseases Institute, has been recognised as *privat-docent* of Medicine. The new Dental Institute in the Invalidenstrasse is now completed, and will be opened at the beginning of the winter session.—*Breslau:* Professor Neisser has been elected Dean of the Medical Faculty for the coming academical year.—*Clausenburg (Kolozsvár):* Dr. Béla Reinbold has been promoted to an Extraordinary Professorship.—*Cologne:* Dr. Fritz Frank, director of the Provincial Midwives' Institute, has been granted the title of Professor; his name is known in connexion with the extraperitoneal Cæsarean operation.—*Heidelberg:* Dr. Richard Werner, *privat-docent* of Surgery, has been granted the title of Extraordinary Professor.—*Iurieff (Dorpat):* Dr. V. Shukoffsky, *privat-docent*, has been promoted to the chair of Children's Diseases.—*Kiel:* Dr. Walter Weiland, assistant in the Medical Clinic, has been recognised as *privat-docent* of Medicine.—*Marburg:* Dr. J. Hürter has been recognised as *privat-docent* of Medicine.—*St. Petersburg (Women's Institute of Medicine):* Dr. Madame E. Kovalevskaya has been appointed *privat-docent* of Physiological Chemistry.—*Strasburg:* Dr. W. Meyerstein has been recognised as *privat-docent* of Medicine.

LITERARY INTELLIGENCE.—In November the Tropical Diseases Bureau, which replaced the Sleeping Sickness Bureau on July 1st, will commence the publication of the *Tropical Diseases Bulletin*. The tropical and sub-tropical diseases of man will be grouped in sections, which will be in charge of the following sectional editors: Fleet-Surgeon P. W. Bassett-Smith, C.B., Lieutenant-Colonel C. Birt, R.A.M.C., Dr. W. Carnegie Brown, Professor George Dean, Dr. H. B. Fantham, Dr. Edward Hindle, Dr. R. T. Leiper, Dr. David Thomson, and Dr. C. M. Wenyon. Groups will be taken also by the Director and Assistant Director. The *Bulletin* will be under the general editorship of the Director. Each number will consist of about 50 pages containing classified summaries of the current literature of the tropical diseases; they will appear as a rule twice a month. The tropical diseases of animals will be treated in a separate publication, the *Tropical Veterinary Bulletin*. This will appear quarterly, from October, and will be in charge of Mr. A. Leslie Sheather, B.Sc., M.R.C.V.S., of the Royal

Veterinary College, London. Messrs. Baillière, Tindall, and Cox, of Henrietta-street, Covent Garden, W.C., will publish both journals.—The Pharmaceutical Press, 72, Great Russell-street, London, W.C., publishers of the "British Pharmaceutical Codex," announce that copies of the new issue of this work can be obtained on approval for seven days by medical men in practice.

DISTRICT MEDICAL OFFICERS AND MOTOR-CARS.—The Westbury-on-Severn board of guardians recently appointed a district medical officer who did not reside in the district to which he had been appointed, and as there were three medical men who resided in the area the Local Government Board required an explanation. The guardians at their last meeting decided to inform the Board that the medical officer appointed by them resided only a short way from his district, his residence was conveniently situated, he had a surgery in the parish, and he used a motor-car.

LONDON INTER-COLLEGIATE SCHOLARSHIPS' BOARD.—A combined examination in anatomy and physiology for entrance scholarships and exhibitions tenable in the Medical Schools of Westminster, St. George's, Charing Cross, and King's College Hospitals will be held in London, beginning on Sept. 24th. These scholarships are open to candidates who have passed the first M.B. of Oxford, the second M.B. of Cambridge or London, or other approved equivalent examinations. Application should be made to the deans of the respective medical schools or to the Secretary of the London Inter-Collegiate Scholarships' Board, University College, London, W.C.

REPORT OF THE MEDICAL OFFICER OF HEALTH FOR BRISTOL.—Some of the remarks made in the course of his 1911 report, just published, by Dr. D. S. Davies, medical officer of health for Bristol, are of interest in their bearing on the administration of sanatorium benefit in the city. Calculating from the figures at his disposal, he estimates the number of cases of pulmonary tuberculosis in Bristol at 2000; and considers that the present sanatorium and hospital accommodation is inadequate. That the 21 beds at Winsley are insufficient is shown by the fact that though only 158 persons (out of a total of 979 notified during the year) applied for admission to the sanatorium, the average period elapsing between application and admission was 15 weeks. Dr. Davies thinks that, in addition to an extension of the available sanatorium accommodation, a farm colony or some similar institution for partially recovered cases and 150 beds for advanced cases are needed. The report also contains some interesting remarks as to the advisability of bacteriological examination of all typhoid convalescents and restrictive control of "carriers." In regard to diphtheria, however, Dr. Davies thinks it unnecessary to apply a strict policy of isolation to all diphtheria carriers, pointing out that such a course cannot be carried out as a routine. Other matters of unusual interest in the report are an account of the infantile diarrhœa outbreak in the late summer of 1911, which was partially controlled by house visitation by district inspectors with two voluntary lady helpers, and a small epidemic of typhoid fever which could not be traced to any special source.

BOOKS, ETC., RECEIVED.

ADLARD AND SON, 23, Bartholomew Close, London, E.C. MASSON ET CIE, 120, Boulevard Saint-Germain, Paris.

Second Congress of L'Association Internationale d'Urologie, London, July 24–28, 1911. Proceedings, Reports, and Discussions. Edited by John G. Pardoe, F.R.C.S., Secretary of the Second Congress. Price 10s. net.

ARNOLD, EDWARD, London.

Internal Secretion and the Ductless Glands. By Swale Vincent, M.D. Lond., D.Sc. Edin., M.R.C.S. Eng., L.R.C.P. Lond., F.R.S. Edin. and Canada; Professor of Physiology in the University of Manitoba, Winnipeg, Canada; Formerly Assistant Professor of Physiology in University College, London. With a Preface by Professor E. A. Schäfer, F.R.S. Price 12s. 6d. net.

BAILLIÈRE, TINDALL AND COX, London.

The Food Inspector's Encyclopædia. By A. Horace Walker, M.R. San. I., Author of "Inspection of Fish, Poultry, Game, Fruit, Vegetables, &c."; Joint Author of "Answers to Meat Inspectors' Examination Questions"; Sanitary Inspector to the Metropolitan Borough of St. Pancras; late Instructor and Lecturer to the Essex, Middlesex, and Hertfordshire County Councils. Price 7s. 6d. net.

The Clinical Pathology of Syphilis and Parasyphilis and its Value for Diagnosis and Controlling Treatment. By Hugh Wansey Bayly, M.A., M.R.C.S., L.R.C.P., Pathologist to the London Lock Hospitals. Price 5s. net.

Aids to Tropical Hygiene. By Major R. J. Blackham, D.P.H. Lond., R.A.M.C., Knight of Grace of the Order of St. John of the Middle Temple, Barrister-at-Law, Kaisar-i-Hind Medallist for Public Service in India, Divisional Sanitary Officer, First Division, Indian Army. Price, paper, 2s. 6d. net; cloth, 3s. net.

BOERICKE AND TAFEL, Philadelphia.

The Animal Kingdom considered Anatomically, Physically, and Philosophically. By Emanuel Swedenborg. Parts 4 and 5. The Organs of Generation and the Formation of the Fœtus in the Womb; after which follow Chapters on the Breasts and the Periosteum. Translated from the Latin and edited by Alfred Acton. Price, cloth, $3.00 net.

CHURCHILL, J. AND A., London.

Digestion and Metabolism: The Physiological and Pathological Chemistry of Nutrition. For Students and Physicians. By Alonzo Englebert Taylor, M.D., Rush Professor of Physiological Chemistry, University of Pennsylvania, Philadelphia. Price 18s. net.

The Evolution of the Vertebrates and Their Kin. By William Patten, Ph.D., Professor of Zoology, and Head of the Department of Biology in Dartmouth College, Hanover, N.H. Price 21s. net.

EUGENICS EDUCATION SOCIETY, 6, York Buildings, Adelphi, London, W.C.

Problems in Eugenics. Papers communicated to the First International Eugenics Congress held at the University of London, July 24th to 30th, 1912. Price 8s. 6d. net.

Abstract of Papers read at the First International Eugenics Congress, University of London, July, 1912. English. Price 1s.

First International Eugenics Congress, London, July 24th to July 30th, 1912, University of London, South Kensington. Catalogue of the Exhibition. Price 1s.

FISCHER, GUSTAV, Jena.

Lehrbuch der Kinderheilkunde. Bearbeitet von Professor Dr. Feer, Zürich; Professor Dr. Finkelstein, Berlin; Privat-Dozent Dr. Ibrahim, München; Dr. L. F. Meyer, Berlin; Professor Dr. Monro, Heidelberg; Professor Dr. v. Pirquet, Wien; Professor Dr. Pfaundler, München; Professor Dr. Thiemich, Magdeburg; Professor Dr. Tobler, Breslau. Herausgegeben von Prof. Dr. E. Feer, Direktor der Universitäts-Kinderklinik in Zürich. Zweite Auflage. Price, paper, M.11.50; bound, M.12.50.

Atlas der menschlichen Blutzellen. Von Prof. Dr. Artur Pappenheim. Supplement-Band. Dritte Lieferung. Tafel XXXIX–XLIII. Price M.14.

Die Arbeitsstätte des Chirurgen und Orthopäden (mit Winken für Einrichtung von Privatkliniken). Von Dr. Oscar Langemak, Spezialarzt für Chirurgie und Orthopädie in Erfurt. Price, paper, M.5; bound, M.6.

Arbeiten aus der medizinischen Klinik zu Leipzig. Heft I. Die Klinik der syphilitischen Aortenerkrankung. Von Dr. Ed. Stadler, Privatdozent an der Universität. Price M.3.

Handbuch der pathogenen Mikroorganismen. Herausgegeben von Dr. W. Kolle und Dr. A. von Wassermann. Zweite vermehrte Auflage. Elfte Lieferung (Bd. VI., Bogen 1–7). Price M.5. Zwölfte Lieferung (Bd. I., Bogen 36–45). Price M.5.

GOVERNMENT PRINTING OFFICE, Washington.

Treasury Department. Public Health and Marine Hospital Service of the United States. Hygienic Laboratory Bulletin No. 84. May, 1912. Digest of Comments on the Pharmacopœia of the United States of America (Eighth Decennial Revision) and on the National Formulary. Third edition. For the Calendar Year ending Dec. 31st, 1910. By Murray Galt Motter and Martin I. Wilbert. Price not stated.

Treasury Department. Public Health and Marine Hospital Service of the United States. Hygienic Laboratory Bulletin No. 83. March, 1912. Sewage Pollution of Interstate and International Waters, with Special Reference to the Spread of Typhoid Fever. II. Lake Superior and St. Mary's River. III. Lake Michigan and the Straits of Mackinac. IV. Lake Huron, St. Clair River, Lake St. Clair, and the Detroit River. V. Lake Ontario and St. Lawrence River. By Allan J. McLaughlin. Price not stated.

GRIFFIN, CHARLES, AND COMPANY, LIMITED, Exeter-street, Strand, London, W.C.

Modern Road Construction. A Practical Treatise for the Use of Engineers, Students, Members of Local Authorities, &c. By Francis Wood, M. Inst. C.E., F.G.S., Borough Surveyor of Fulham; late Borough Engineer, Bacup, Lancs.; Author of "Practical Sanitary Engineering." Price 4s. 6d. net.

HEADLEY BROTHERS, 13, Devonshire-street, Bishopsgate, and 140, Bishopsgate, London, E.C.

The Problem of Consumption. By A Birmingham Physician. Price 1d.

HIRSCHWALD, AUGUST, Berlin.

Forschungen und Erfahrungen, 1880–1910. Eine Sammlung ausgewählter Arbeiten. Von Prof. Dr. Sir Felix Semon, K.C.V.O., Fellow of the Royal College of Physicians; Vice-President and Consulting Laryngologist to the National Hospital for the Paralysed and Epileptic; A.O. Leibarzt weiland S.M. König Eduard VII. von Grossbritanien und Irland. Zwei Bände. Price M.32.

Chirurgische Technik zur normalen und pathologischen Physiologie des Verdauungsapparates. Von Dr. Adolf Bickel, a.o. Professor an der Universität und Vorsteher der experimentell-biologischen Abteilung des Königlichen Pathologischen Instituts zu Berlin, und Dr. Gerhardt Katsch, Assistent am städt. Krankenhaus Altona. Price M.12.

Grundriss der psychiatrischen Diagnostik, nebst einem Anhang, enthaltend die für den Psychiater wichtigsten Gesetzbestimmungen und eine Uebersicht der gebräuchlichsten Schlafmittel. Von Prof. Dr. Raecke, in Frankfurt a.M. Dritte vermehrte und verbesserte Auflage. Price M.3.

Lebenserinnerungen von Franz König. Mit einem Anhang. Gedächtnisrede, gehalten am 16 Februar, 1911. Von O. Hildebrand. Mit dem Portrait Franz Königs. Price M.2.

Bibliothek von Coler-von-Schjerning. Band XXXVI. Robert Koch. Eine biographische Studie. Von Dr. Karl Wezel, Stabsarzt an der Kaiser Wilhelms-Akademie für das militärärztliche Bildungswesen. Mit einem Porträt und 5 Abbildungen im Text. Price M.3.60.

KARGER, S., Berlin.

Die vasomotorisch-trophischen Neurosen. Eine Monographie. Von Dr. R. Cassirer, Privatdozent an der Universität Berlin. Zweite umgearbeitete und vermehrte Auflage. Price M.30.

Handbuch der Nervenkrankheiten im Kindesalter. Von Prof. L. Bruns, Oberarzt a.d. Hannoverschen Kinderheilanstalt und Nervenarzt in Hannover, Prof. A. Cramer, Geh. Med.-Rat. Direktor der Kgl. Univ.-Klinik für psychische und Nervenkrankheiten in Göttingen, und Prof. Th. Ziehen, Geh. Med.-Rat. fr. Direktor der psychiatrischen und Nervenklinik der Kgl. Charité in Berlin. Price M.30.

Ueber Säuglingsernährung. Von Dr. Ernst Schloss. (Aus der Grossen Friedrichs-Waisenhaus der Stadt Berlin in Rummelsburg. Chefarzt: Professor Erich Müller.) Price M.6.

Zur Psychopathologie des Alltagslebens. (Ueber Vergessen, Versprechen, Vergreifen, Aberglaube und Irrtum.) Von Prof. Dr. Sigm. Freud in Wien. Vierte, vermehrte Auflage. Price M.5.

KING, P. S., AND SON, Orchard House, Westminster, London.

Legislation for the Protection of Women. By Lord Charnwood. Price 2*d*.

MACDONALD AND EVANS, 4, Adam- treet, Adelphi, London, W.C.

The Student's Guide to Life Assurance in Theory and Practice. To which are added Chapters on Fire and Other Branches of Insurance. By Arthur Wyndham Tarn, F.I.A. (of the Guardian Assurance Company, Limited), Editor of Walford's "Insurance Guide and Handbook." Price 3*s*. 6*d*.

MEDICAL REVIEW OF REVIEWS, 206, Broadway, New York.

An Essay on Hasheesh, including Observations and Experiments. By Victor Robinson, Contributing Editor, Medical Review of Reviews; Pharmaceutical Chemist, Columbia University; Member of the American Chemical Society; Author of "Pathfinders in Medicine." Price 50 cents, post paid.

MURRAY, JOHN, Albemarle-street, London, W.

The Treatment of Tuberculosis by means of the Immune Substances (I.K.) Therapy. An Introduction to Carl Spengler's Work on Immunity and Tuberculosis. By Walter H. Fearis, formerly Demonstrator of Botany, University College, Reading. With a Foreword by Dr. Carl Spengler. Price 6*s*. net.

NATIONAL ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS, 105, E.22nd Street, New York.

Fresh Air and How to Use It. By Thomas Spees Carrington, M.D., Assistant Secretary of the National Association for the Study and Prevention of Tuberculosis. Price, cloth, $1.00.

PAUL, STANLEY, AND Co., 31, Essex-street, Strand, London, W.C.

The First Signs of Insanity, Their Prevention and Treatment. By Bernard Hollander, M.D. Price 10*s*. 6*d*. net.

SAUNDERS, W. B., COMPANY, Philadelphia and London.

Collected Papers by the Staff of St. Mary's Hospital Mayo Clinic, Rochester, Minnesota. 1911. Price 24*s*. net.

SPRINGER, JULIUS, Berlin.

Der Endemische Kropf, mit besonderer Berücksichtigung des Vorkommens im Königreich Bayern. Von Dr. A. Schittenhelm, a.o. Professor der klinischen Propädeutik und Dr. W. Weichardt, a.o. Professor und 2. Direktor d. Kgl. bakteriologischen Untersuchungsanstalt an der Universität Erlangen. Price, paper, M.9; bound, M.9.80.

STEINKOPFF, Dresden und Leipzig.

Leitfaden der praktischen Kriegs-Chirurgie. Von Dr. Walter von Oettingen, Chirurg in Berlin-Wilmersdorf, S. Z. Chefarzt des Livländischen Feldlazaretts vom Roten Kreuz im Russisch-Japanischen Kriege. Price, bound, M.9.50.

THACKER, SPINK AND Co., Government Place, Calcutta.

A Short Guide to the Instruments and Appliances Required for Operations and the Dressing of Cases. By R. H. Castor, Lieutenant-Colonel, I.M.S. Price 1 rupee.

UNIVERSITY TUTORIAL PRESS, Burlington House, Cambridge. London Office: 32, Red Lion-square, Holborn, W.C.

University Correspondence College. The Calendar, 1911-1912. Price 1*s*. net.

URBAN UND SCHWARZENBERG, Berlin und Wien.

Syphilis und syphilisähnliche Erkrankungen des Mundes. Für Aerzte, Zahnärzte und Studierende. Von Prof. Dr. F. Zinsser, dirigierendem Arzt der Abteilung für Hautkranke der Städtischen Krankenanstalt Lindenburg, Dozenten an der Akademie für praktische Medizin in Köln. Price, paper, M.15; bound, M.17.50.

Biochemie für Zahnärzte und Studierende. Von Dr. Kurt Hoffendahl, Lehrer der Zahnheilkunde an der Kgl. Friedrich Wilhelms-Universität zu Berlin. Price, paper, M.9; bound, M.11.

Taschenbuch der Zahnheilkunde für praktische Aerzte. Von Dr. Kurt Hoffendahl, Lehrer der Zahnheilkunde an der Kgl. Friedrich Wilhelms-Universität zu Berlin. Price M.4.

VERLAG DER "JUGEND," Lessingstrasse, 1, München.

Parerga zum Elektrolytkreislauf (Ionenkreislauf). Von Georg Hirth, Verfasser von "Der elektrochemische Betrieb der Organismen." Zweite Auflage, vermehrt durch ein aufklärendes Vorwort u.s. Price not stated.

WRIGHT, JOHN, AND SONS, LIMITED, Bristol. SIMPKIN, MARSHALL, HAMILTON, KENT, AND Co., LIMITED, London.

Statistics of Puerperal Fever and Allied Infectious Diseases. By George Geddes, M.D., C.M. Aberd. Price 6*s*. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ADAMS, ALFRED, has been appointed Resident Medical Officer at the Kingswood Sanatorium, Delamere Forest.

BRYCE, A. G., M.B., Ch.B. Vict., has been appointed House Physician at the Manchester Royal Infirmary.

DOWLEY, THOMAS PAUL, M.B., B.Ch., B.A.O. Dub., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Lisbellaw District of the county of Fermanagh.

HEGGS, T. BARRETT, M.D. Aberd., Ch.B., D.P.H. Camb., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Sheerness District of the county of Kent.

HUSTON, W. A., L.R.C.P. & S. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Grey Abbey District of the county of Down.

JEFFERSON, J. C., M.B., Ch.B. Vict., has been appointed Senior House Surgeon at the Manchester Royal Infirmary.

MACKLIN, A. H., M.B., Ch.B. Vict., has been appointed House Physician at the Manchester Royal Infirmary.

MIDGLEY, P. H., M.B., Ch.B. Vict., has been appointed Junior House Surgeon at the Manchester Royal Infirmary.

MOLAN, CORNELIUS, L.R.C.S. Irel., has been appointed Junior House Surgeon at the Stockport Infirmary.

PEMBERTON, GEORGE B., F.R.C.S. Edin., M.B., Ch.B. Edin., has been appointed Medical Officer of Health of the District of Disley, Cheshire, with Hayfield.

RADCLIFFE, FRANK, M.B., Ch.B. Edin., has been appointed Assistant House Physician at the Devonshire Hospital, Buxton, Derbyshire.

SALMOND, R. W. A., Ch.M., M.D., D.P.H., has been appointed Medical Officer in Charge of the Electrical Department, Queen's Hospital for Children, Bethnal Green, E.

SAVILL, AGNES F., has been appointed Assistant Physician to the London Skin Hospital, Fitzroy-square.

SAWDON, G. E., M.B., Ch.B. Vict., has been appointed Senior House Surgeon at the Manchester Royal Infirmary.

SEPPELT, NORBERT E., L.R.C.P. & S. Edin., has been appointed Junior House Surgeon at the Stockport Infirmary.

THOMAS, HUGH MORTIMER, M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer of Health to the Rural District, Haverfordwest.

THOMSON, H. HYSLOP, M.D. Glasg., has been appointed Medical Officer under the King Edward VII. Welsh National Memorial Scheme.

VINCENT, W. H., L.M.S.S.A., has been appointed House Surgeon at the Evelina Hospital for Sick Children.

WHITAKER, H., M.B., Ch.B. Edin., has been appointed House Surgeon at the Stockport Infirmary.

WHITE, C. F., M.B., Ch.B. Vict., has been appointed Junior House Surgeon to the Manchester Royal Infirmary.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BARNSLEY, BECKETT HOSPITAL AND DISPENSARY.—Second House Surgeon, unmarried. Salary £100 per annum, with apartments, board, and laundry.

BEDFORD COUNTY HOSPITAL.—Assistant House Surgeon. Salary £80 per annum, with board, lodging, and laundry.

BIRKENHEAD BOROUGH HOSPITAL.—Senior House Surgeon. Salary £100 per annum, with board and laundry.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Third House Surgeon. Salary £75 per annum, with board, rooms, and laundry.

BIRMINGHAM TUBERCULOSIS DISPENSARY.—Medical Practitioner. Salary £500 per annum, with offices.

BIRMINGHAM UNION INFIRMARY, Dudley-road.—Three Assistant Medical Officers. Salary £120 per annum, with apartments, rations, laundry, and attendance.

BRIGHTON AND HOVE HOSPITAL FOR WOMEN.—House Surgeon, unmarried, for six months. Salary £80 per annum, with apartments, board, attendance, &c.

BRIGHTON, ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, Dyke-road.—House Surgeon for six months. Salary at rate of £80 per annum, with board, lodging, and washing.

CARDIFF, ASYLUM FOR THE COUNTY BOROUGH OF, Whitchurch, near Cardiff.—Second Assistant Medical Officer, unmarried. Salary £180 per annum and all found.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria-park, E.—Clinical Assistant.

CHELTENHAM GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board and lodging.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—House Physician. Salary £80 per annum, with board, apartments, and laundry.

COVENTRY AND WARWICKSHIRE HOSPITAL.—Junior House Surgeon. Salary £90 per annum, with rooms, board, washing, and attendance.

DUDLEY, GUEST HOSPITAL.—Senior Resident Medical Officer. Salary 100 guineas per annum, with board, residence, attendance, and washing.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Assistant House Surgeon. Salary £55 per annum, with board and washing.

DUNDEE DISTRICT ASYLUM.—Junior Resident Medical Officer. Salary £120 per annum, with board and apartments.

DURHAM COUNTY ASYLUM, Sedgefield, co. Durham.—Medical Superintendent. Salary £800 per annum, with house, garden, fuel and light, &c.

EAST LONDON HOSPITAL FOR CHILDREN, Shadwell, E.—Clinical Assistant.

FAREHAM, HANTS COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £168 per annum, with apartments, board, washing, and attendance.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.—House Physician and House Surgeon, each for six months. Salary at rate of £70 per annum, with board, residence, and laundry.

HASTINGS, EAST SUSSEX HOSPITAL.—Assistant House Surgeon. Salary at rate of £70 per annum, with residence, board, and washing.

HULL, CITY AND COUNTY OF KINGSTON-UPON-HULL.—Senior Tuberculosis Officer. Salary £500 per annum.

HULL ROYAL INFIRMARY.—Senior House Surgeon, unmarried. Salary £150 per annum, with board and apartments. Also House Physician, unmarried. Salary £100 per annum, with board and apartments.

KETTERING AND DISTRICT GENERAL HOSPITAL.—Resident Medical Officer, unmarried. Salary £100 per annum, with board, residence, &c.

KINGSTON-ON-THAMES, KINGSTON VICTORIA HOSPITAL.—Honorary Radiographer.

LARBERT, STIRLING DISTRICT ASYLUM.—Junior Assistant Medical Officer. Salary £140 per annum, with board, lodging, and laundry.

LEAMINGTON SPA, WARNEFORD GENERAL HOSPITAL.—House Physician. Salary £85 per annum, with board, residence, and laundry.

LEICESTER ROYAL INFIRMARY.—House Physician. Salary at rate of £100 per annum, with board, lodging, and washing.

LEYTON, WALTHAMSTOW, AND WANSTEAD CHILDREN'S AND GENERAL HOSPITAL.—Honorary Anæsthetist and Honorary Pathologist and Radiographer.

LINCOLN COUNTY HOSPITAL.—Junior House Surgeon, unmarried, for six months. Salary at rate of £100 per annum, with board, residence, and washing.

LONDON MEDICAL MISSION, Endell-street, W.C.—Resident Medical Officer.

MACCLESFIELD GENERAL INFIRMARY.—Junior House Surgeon. Salary £80 per annum, with board and residence.

MAIDSTONE, KENT COUNTY ASYLUM.—Fourth Assistant Medical Officer, unmarried. Salary £175 per annum, with quarters, attendance, washing, &c.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Visiting Physician. Salary £100 per annum.

MIDDLESBROUGH, NORTH RIDING INFIRMARY.—Senior House Surgeon. Salary £100 per annum, with residence, board, washing, and attendance.

MIDDLESEX HOSPITAL, W.—Assistant Physician or Assistant Surgeon to the Department for Diseases of the Skin.

MILLER GENERAL HOSPITAL FOR SOUTH-EAST LONDON, Greenwich-road, S.E.—Senior and Junior House Surgeons, each for six months. Salaries at rate of £100 and £85 respectively, with board, attendance, and laundry.

NEW HOSPITAL FOR WOMEN.—Senior Assistant (Female). Also Clinical Assistant.

NORTHAMPTON GENERAL HOSPITAL.—Senior Resident Medical Officer, unmarried. Salary £120 per annum, with apartments, board, washing, attendance, &c.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Physician for six months. Salary £75 per annum, with board, residence, and washing.

POWICK, COUNTY AND CITY ASYLUM, Worcester.—Junior Assistant Medical Officer, unmarried. Salary £160 per annum, with board, apartments, washing, and attendance.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeon and House Physician for six months. Salary in each case £80 per annum, with board, residence, and washing.

RICHMOND, SURREY, ROYAL HOSPITAL.—Assistant House Surgeon. Salary £70 per annum, with board and apartments.

ROCHDALE INFIRMARY.—Junior House Surgeon, unmarried. Salary £80 per annum, with board, residence, and laundry.

ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C.—Senior House Surgeon. Salary at rate of £100 per annum, with board and residence.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.—Resident House Surgeon, unmarried, for six months. Salary £100 per annum, with board, residence, and washing.

ROYAL NAVAL MEDICAL SERVICE.—Fifteen appointments.

RYDE, ROYAL ISLE OF WIGHT COUNTY HOSPITAL.—Resident House Surgeon, unmarried. Salary £100 per annum.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.—Dental Surgeon. Salary £50 per annum.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Junior House Surgeon for six months. Salary £80 per annum, with residence, board, and allowance for laundry.

SHEFFIELD, ECCLESALL BIERLOW UNION WORKHOUSE.—Resident Assistant Medical Officer. Salary £150 per annum, with board, washing, and apartments.

SHEFFIELD ROYAL INFIRMARY.—Junior Resident Medical Officer. Salary £70 per annum.

SHREWSBURY, SALOP INFIRMARY (THE COUNTY HOSPITAL).—House Physician for six months. Salary at rate of £90 per annum, with board and apartments.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Senior House Surgeon. Salary £100 per annum, with residence, board, and washing.

STAFFORD, COTON HILL LUNATIC HOSPITAL.—Assistant Medical Officer, unmarried. Salary £150 per annum, with residence, board, and laundry.

SUNDERLAND, CHILDREN'S HOSPITAL.—Resident Medical Officer. Salary £80 per annum, with board, residence, and laundry.

SUNDERLAND ROYAL INFIRMARY.—Junior House Surgeon for six months. Salary £80 per annum, with board, residence, and laundry.

THROAT HOSPITAL, Golden-square, W.—Resident House Surgeon. Salary £75 per annum, with board, residence, and laundry.

VENTNOR, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Senior Resident Medical Officer, unmarried. Salary £250 per annum, with board and lodging.

WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, PARALYSIS, AND EPILEPSY, 73, Welbeck-street, W.—Honorary Registrar and Pathologist. Also Resident House Physician for six months. Salary at rate of £50 per annum.

WEST HAM AND EASTERN GENERAL HOSPITAL, Stratford.—Junior House Physician. Salary at rate of £75 per annum, with board, residence, and washing.

WEST SUFFOLK COUNTY COUNCIL.—County Medical Officer of Health and County School Medical Officer. Salary £500 per annum.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy as Certifying Surgeon under the Factory and Workshop Acts at Long Sutton, in the county of Lincoln.

THE Home Secretary gives notice of a vacancy for an Ophthalmic Specialist Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 16; and of a vacancy for a Medical Referee for the Dunfermline with Kinross District.

Births, Marriages, and Deaths.

BIRTHS.

CURWEN.—On Sept. 1st, at The Elms, Frome, Somerset, the wife of H. Curwen, M.B., Ch.B., D.P.H., Medical Officer, Zanzibar Government, of a son.

PEARSON.—To Dr. Arthur Pearson, M.B. Lond., &c., of The Kalanga, and Mrs. Pearson, on August 23rd, at Tunstall Rectory, Suffolk, the residence of her father, a son.

MARRIAGES.

BRIDGER—AYLWIN-FOSTER.—On August 27th, at St. Andrew's Church, Biggleswade, by the Rev. R. S. Bagshaw, Vicar, assisted by the Rev. T. M. Plant, Robert Daniel Bridger, M.R.C.S., L.R.C.P., third son of the late Robert Bridger, of Montevideo, to Dorothy Noel Aylwin, second daughter of the late Rev. Edmund Clement Aylwin-Foster, Rector of Clifton, Beds.

BURNEY—ROLLESTON.—On August 20th, at Nun's Cross Church, by the Rev. A. D. Moore, Rector of the Parish, Captain Walter Henry Skardon Burney, R.A.M.C., son of Walter Burney, Esq., M.D., of Blackheath, to Phebe Elizabeth, youngest daughter of the late Henry Rolleston, of Glasshouse, King's County.

HART—SPARK.—On August 28th, at St. Clement Danes, Strand, by the Rev. W. Pennington Bickford, Bernard Hart, M.D., to Mabel Emily, youngest daughter of the late Charles E. Spark and of Mrs. Spark, of Ealing.

DEATHS.

BIDWELL.—On Sept. 2nd, Leonard Arthur Bidwell, F.R.C.S., Senior Surgeon to West London Hospital, of Upper Wimpole-street, W., and Tower House, Bexhill-on-Sea, aged 47 years.

DENT.—On August 26th, Clinton Thomas Dent, M.C. Cantab., F.R.C.S., of Brook-street, W., Vice-President, Royal College of Surgeons, and Senior Surgeon, St. George's Hospital, aged 61 years.

FRASER.—On August 28th, at Lypiatt Terrace, Cheltenham, Surgeon-General D. A. Campbell Fraser.

GARLICK.—On Sept. 2nd, George Garlick, M.D. Lond., as the result of an accident.

HEATH.—On August 25th, at St. Ann's Heath, William Lenton Heath, M.D., aged 58 years.

WICKHAM.—On August 29th, Charles Thomas Wickham, M.R.C.S., L.S.A., of Sutton Scotney, Hants, late of Winchester, aged 80 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE RELATIONS OF PHYSICIAN, PHARMACIST, AND PATIENT.

THE mutual relations that arise, in certain circumstances, between the physician, the pharmacist, and the patient were the subject of an interesting discussion in the practice section at the recent annual meeting of the British Pharmaceutical Conference. Mr. J. R. Hill, in introducing the subject, raised the question as to whether the prescriber was justified in criticising the work of the dispenser or in scrutinising the medicine supplied. In Mr. Hill's view the prescriber may criticise the dispenser within limits, but he gave an instance showing that these limits were not always duly observed. Here a physician informed his patient that a silver nitrate lotion supplied by a druggist was wrong, and the physician emptied the lotion into the sink and advised the patient to go to another pharmaceutical chemist. The patient reported what had taken place, and the first pharmaceutical chemist thereupon communicated with the prescriber, who informed him that he diluted the lotion with tap-water, and it did not become milky. However, the dispenser explained that the milkiness which the medical man expected depended on the percentage of chlorine in tap-water, and showed that in the local supply the amount was so small as to produce only a scarcely perceptible haze. The prescriber very properly apologised to the dispenser, and explained the circumstances to the patient, but the dispenser would not have had the opportunity of righting himself if the patient had been silent on the episode. Mr. Hill suggested it would be more satisfactory if prescribers who have reason to believe that the dispenser has made a mistake would communicate directly with him and refrain from making observations to the patient, and we agree that this is the proper course to pursue.

"INCLUDING ATTENDANCE."

To the Editor of THE LANCET.

SIR,—Last year I was surgeon on board a ship belonging to a well-known line of steamers. The second-class passengers, having to pay no fee for consulting me, were most prodigal in their patronage of me. This year I made another voyage in another ship belonging to the same company. The second-class passengers, having to pay me 2s. 6d. each consultation, left me severely alone. Will Dr. B. Hall allow that these phenomena have some bearing on the Insurance Act? I enclose my card with the names of the ships.—I am, Sir, yours faithfully,

August 20th, 1911. FLOSS.

HEALTH AND SANITATION IN ASHANTI.

Mr. J. J. Thorburn, C.M.G., Governor of Ashanti, in his annual report for 1911, recently received at the Colonial Office, states that the most important event of the year was the taking of the census of the population, which showed a total of 287,814—141,231 males and 146,583 females. It is generally admitted, however, that these numbers do not represent the true state of affairs by at least 20 to 25 per cent., as the returns invariably under-estimated the population, probably owing to a nervous feeling with regard to future taxation. The figures cover an area of roughly 20,000 square miles, or a population of 14·4 per square mile. The Europeans numbered 223. The health of the latter during the year was good. There are in Coomassie 23 Syrians, who suffer considerably. They live with their wives and children among the native population in more or less a state of squalor. They seldom take quinine, and suffer from malaria in consequence. There were three cases of hæmoglobinuric fever among them, one ending fatally. In Coomassie Native Hospital the admissions for the year numbered 657 and the deaths 27, whilst the out-patients, including new cases and old, totalled 41,058. The Ashantis have not as yet much faith in European medicine, and trouble the doctors but little, and then only at the eleventh hour. The outbreak of small-pox, which commenced in 1910, continued for the first four months of 1911. Thirty-seven cases were treated in the isolation hospital at Coomassie, 11 ending fatally. A native public vaccinator has been appointed who travels through the country vaccinating the inhabitants. He has met with marked success, the people willingly presenting themselves for vaccination, about two-thirds of those vaccinated being successful. The vaccine lymph, as supplied from the Government lymph establishment, Accra, was found very successful when it was used as soon after receipt as possible. Four cases of trypanosomiasis were treated in Coomassie during the year; among these one death occurred, whilst in the other three it is recorded that the disease disappeared after a period of treatment. Four more cases were under observation in a village near Coomassie, and after a long course of atoxyl treatment the parasites disappeared from their blood and the people are stated to remain in a healthy condition. The following medical officers were on special sleeping sickness duty at British Kratchi during the year: Mr. G. J. W. Keigwin, Dr. E. Slack, and Mr. A. M. Dowdall Amongst the cases they treated they record three deaths and five recoveries after long courses of atoxyl. In North-Western Ashanti there were 17 deaths. The sanitation of the four centres of administration—viz., Coomassie, Obuasi, Sunyani, and Kintampo—was kept in an efficient state. The incinerators in Coomassie and Obuasi work fairly well, considering the amount of refuse they have to deal with. An incinerator has also been built at Kintampo. A permanent gang of 75 scavengers under one inspector and three headmen was kept busy in looking after the sanitation of Coomassie, as the town is rapidly growing, being now of about 19,000 inhabitants. Mosquitoes were few in cantonments and in the European quarters, but more numerous in the native quarter. Good vegetable gardens wer maintained by the medical officers at the various stations.

MEDICAL AFFAIRS IN THE ARGENTINE.

HOSPITAL conditions in the Argentine apparently leave not a little to be desired. According to the Bahia Blanca correspondent of the *Buenos Aires Herald* they are hoping for better things now that the really Municipal Hospital of that city is to be administered directly by the municipality. The fact that there are always British patients in the hospital, mostly paying patients, sailors being paid for by their ships and railwaymen by the railway companies, says the correspondent, should entitle British interests to some consideration. He complains of the quality of the food, which "is not such as commends itself to English tastes," and of its distribution, which, being left in the hands of the enfermeros, or male nurses—there are no female nurses, apart from religious sisterhoods—is not altogether above suspicion of partiality. It is suggested also that the institution is grossly abused by large numbers of natives who come into hospital to be treated for some very slight ailment which would be dealt with in Europe at the out-patient department. On the score of cleanliness also, we are told, there is much to be desired. A most needed improvement is a resident house surgeon; the present delay in summoning a doctor sometimes results in the patient being dead before he can be medically seen. The nursing staff, too, needs enlarging, and the correspondent wistfully longs for lady nurses, but adds that, "apart from the religious sisterhoods, it would be found impracticable to employ ladies in this capacity in a general hospital."

A report concerning the hospital in Buenos Aires comes to us through a medical correspondent, who writes:—

> During a trip out to this lovely republic I found them exceedingly anxious and very particular as to their sanitary inspection of vessels. But even this good thing can be carried too far, and unfortunately in the case I happened to witness it might have meant loss of life to the injured person. A man who had fallen down a ship's hold was taken from one of the large vessels in port by a tender. *En route*, though the case was a surgical one requiring speedy attention, an ordeal of red tapeism was instituted, just as though it had been one of fever or some contagious disease. First, the tender proceeded on her voyage, a distance of about 15 miles. It was then delayed by the public health officials for the purpose of taking evidence as to the nature of the case, thus causing delay No. 1. On arrival at the wharf further papers had to be produced and signed, while the injured person was not allowed to be moved till these were got in order, causing delay No. 2. Delay No. 3 took place at the receiving office or warehouse, where further papers had to be signed and witnessed. Here the patient and his friends awaited anxiously the arrival of the ambulance, the jolting of which, as I was afterwards informed, was severe. When the patient at last arrived he had been travelling from 11 A.M. till 4 P.M. The officials do not understand a word of English, and it may be mentioned that English doctors are not allowed to practise in this republic unless they pass an examination in Spanish.

The British hospital at Buenos Aires is situated some miles distant from the water front.

THE GIRLS' SCHOOL YEAR BOOK.

THE problem of selecting suitable schools for girls is one that often causes anxiety to parents and guardians. "The Girls' School Year Book," the official reference book of the Association of Head Mistresses, will be useful to such inquirers, for it contains a list of public schools and all the information likely to be required with regard to them. The articles on the future career of girls in the civil service and the professions considerably enhance the utility of the book. Part II. contains a fairly full list of public secondary schools arranged both according to localities and alphabetically. This is a decidedly useful feature, but it might be made even more useful if it included some details as to fees. People with limited incomes find just the same difficulty in selecting schools for their daughters as others with larger purses, and the mere name of the head of the school does not give the help that is expected from an otherwise useful book.

THE NEW MEDICO-LEGAL COLLECTION AT THE MUSEUM OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE new Medico-Legal Collection which is being formed in the Museum of the Royal College of Surgeons of England already contains some interesting specimens. Among these is the shaft of a right femur, showing a circular elevation probably the site of a former fracture, which was removed from the charred remains of a body believed to be that of a notorious anarchist named Joseph, which was found in the débris after the Sidney-street siege at Whitechapel last year. Joseph was known to have a limp, and identification was founded on the indication of the fracture. Another exhibit is that of a terminal metal piece of an umbrella 4½ inches long, which was thrust into the pons of the medulla oblongata from the face and passed through the antrum, sphenoid, and brain substance to a depth of 1½ inches. The injury was caused during an altercation between two men in the East end of London, and the umbrella was said to have been used by one of them in defending himself against an attack by the victim, who died four days after the affair. Other presentations to this collection include methods by which persons have hanged themselves—by means of pieces of rope, string, bandage, &c. Perhaps the most uncommon of these cases is that of a boy, aged 12, who placed an iron bar across the right angle formed by two garden walls, stood upon a box, fastened a rope round his neck, and kicked the support away. Professor Harvey Littlejohn has given valuable advice to the Conservator of the Museum in planning the arrangements for this new collection.

THE POSITION OF VACCINATION IN THE WEST OF ENGLAND.

AT the last meeting of the Barnstaple Board of Guardians it was reported that in 1911, 117 births were registered, and of these 23 were successfully vaccinated, and 78 had certificates for conscientious exemptions. During the first six months of 1912 the exemptions numbered 87. The clerk stated that "Vaccination was practically a dead letter at Barnstaple, it was an unvaccinated town." At the last meeting of the Chard (Somerset) Board of Guardians a discussion took place on the decline of vaccination in the union. It was stated that at Ilminster during six months, although only 59 births had been registered, 24 conscientious exemptions had been granted. It was said, by the vaccination officer, that when the announcement of a birth was made in the local newspapers, the anti-vaccinationists at once sent the parents a considerable amount of literature. After some discussion it was decided to issue notices drawing attention to the necessity of vaccination, Mr. W. H. Speke suggesting that it would be wise to send one of these to every house in which a birth occurred.

SAND-FLIES.

"Medical Missionary" (Palestine), after several more or less sleepless nights, wishes to know if there is any way of getting rid of a plague of sand-flies. They manage to get through the meshes of the finest curtain he has. He would like to know of any manner of fumigation efficient and yet not disagreeable, or of any skin application the power of which will remain all through the night. He asks if there is any known way of preventing the existence of the pests.

HARROGATE.

THE "Guide to Harrogate," edited by Gordon Home (London: A. and C. Black. 1912. Pp. 126. Price 1s. net), is remarkably cheap in price and convenient in size, well printed, and well illustrated, there being seven good maps and plans in addition to 12 coloured full-page illustrations. The feature of the book is the alphabetical arrangement of the matters dealt with, covering almost every interest of the tourist, the seeker after health, and the local inhabitant. Harrogate for many people suggests a place for invalids, which, indeed, it is, but the beautiful scenery and places of historic interest in the immediately surrounding districts make it an excellent holiday resort.

THE CHARITIES REGISTER AND DIGEST, 1912.

THE Charity Organisation Society, whose general object is to give a definite aim to, and to direct into the most effectual channels, the large amount of benevolent force at work in England, and particularly in London, issues every year a Charities Register and Digest (London, New York, Bombay, and Calcutta: Longmans, Green, and Co. 1912. Pp. cccIxxviii.-714. Price 5s. net). Besides considerable information regarding eleemosynary relief in sickness and distress, there are articles on the duties of various bodies who distribute charity and the means of obtaining public and private relief, and other useful information, also articles on special branches of charitable work—Tuberculosis and the Tuberculous; Inebriety and Inebriates; Lunatics, Idiots, and Imbeciles; Cripples, Epileptics; and the Blind. There is also a list of charitable institutions, alphabetically arranged according to the purpose of the charity, and an appendix gives information with regard to friendly and trade societies, savings banks, and guilds of help. A full index completes a most useful book of reference.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

A DIARY OF CONGRESSES.

WE shall publish this diary from time to time that our readers may have under their hands the dates of the approaching scientific Congresses. It is unnecessary to issue the lists of all these functions week by week, and we propose to make only such gatherings as will occur in the immediate future the subject of regular announcement. The following Congresses, Conferences, and Exhibitions are announced for September and October:—

May to October (London, Earl's Court).—Shakespeare's England.
Aug. 24th–Sept. 9th (Toronto).—Canadian National Exhibition.
Sept. 1st–14th (France).—Voyage d'Etudes Médicales.
,, 4th–11th (Dundee).—British Association.
,, 6th–13th (New York).—Eighth International Congress of Applied Chemistry.
,, 8th and 9th (Zürich).—Congress of Psychiatry and Psychotherapy.
,, 8th–11th (London, Royal Agricultural Hall).—Dairy Show.
,, 9th (probable opening date) (Geneva).—International Congress of Anthropology and Prehistoric Archeology.
,, 9th–10th (San Sebastian).—Third Spanish Congress of Tuberculosis.
,, 9th–12th (Berlin).—Sixth International Congress of Obstetrics and Gynæcology.
,, 15th–21st (Münster).—Eighty-fourth Meeting of the German Association of Scientists and Medical Practitioners.
,, 23rd–25th (Toulouse).—"Cold" Congress. (Cold Storage and Cryologic Methods.)
,, 23rd–28th (Washington, D.C.).—Fifteenth International Congress on Hygiene and Demography.
,, 24th–27th (Detroit).—Fourteenth Annual Meeting of the American Hospital Association.
,, 27th–29th (Hamburg).—Sixth Annual Meeting of the German Society of Specialists in Nerve Diseases.
,, 30th–Oct. 4th (London, Royal Horticultural Hall).—Eighth London Medical Exhibition.
,, (Toronto).—Second Annual Meeting, Canadian Public Health Association.
September or October (Perth, Western Australia).—(Three days.) Health Congress.
Oct. 3rd and 4th (Columbia, South Carolina).—National Conference on Pellagra.
,, 3rd–8th (Prague).—Sixth International Congress of Radiology and Medical Electrology.
,, 9th–12th (New York).—Electrical Exposition and Automobile Show.
,, 10th–12th (Paris).—Sixteenth Session of the French Association of Urology.
,, 10th–13th (Meran).—Seventh Austrian Congress of Balneologists
,, 13th–16th (Paris).—Thirteenth French Congress of Medicine.
,, 16th–21st (Rome).—International Congress on the History of Art.
,, 17th–23rd (Paris).—First International Congress of Comparative Pathology.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye.

TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eye. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Clinical Theatre, London Hospital, Mile End-road, E.

MONDAY.—2.15 P.M., Demonstration in Clinical Medicine:—Dr. Wall: Diseases of the Pleura.

TUESDAY.—2.15 P.M., Demonstration in Clinical Medicine:—Dr. Grünbaum: Diseases giving rise to Morbid Renal Excretion.

WEDNESDAY.—2.15 P.M., Demonstration in Clinical Medicine:—Dr. Hutchison: Diseases of Children.

THURSDAY.—2.15 P.M., Demonstration in Clinical Medicine:—Dr. Thompson: Diseases of the Nervous System.

FRIDAY.—2.15 P.M., Demonstration in Clinical Medicine:—Dr. L. Smith: Diseases of the Heart.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (9th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

TUESDAY (10th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.), Royal National Orthopædic (9.30 A.M. and 4 P.M.).

WEDNESDAY (11th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (12th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal National Orthopædic (9 A.M. and 3.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M. Aural and Ophthalmic), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (13th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Royal National Orthopædic (3.30 P.M.), Soho-square (2 P.M.). Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (14th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.) the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic (2 P.M.), Hospital operations are performed daily.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial Staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. I. of 1912, which was completed with the issue of June 29th, were given in THE LANCET of July 6th.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1912 are now ready. Bound in cloth, gilt lettered, price 16*s.*, carriage extra.

Cases for binding the half-year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Sept. 4th, 1912.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rain-fall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Aug. 29	29·54	S.W.	0·01	107	69	51	60	61	Raining
,, 30	29·66	W.	0·21	113	68	57	58	61	Fine
,, 31	30·10	N.W.	0·02	107	64	51	52	56	Fine
Sept. 1	29·95	S.W.	0·14	92	64	53	54	56	Overcast
,, 2	29·84	W.	0·07	104	63	53	55	57	Fine
,, 3	30·18	N.	0·02	99	62	48	49	52	Raining
,, 4	29·95	S.W.	...	118	70	52	60	62	Overcast

The following journals, magazines, &c., have been received.—Pediatrics, The Child, The Therapeutic Gazette, The Calcutta Medical Journal, Bulletin of the Manila Medical Society, South African Medical Record, Knowledge, Archives Générales de Médecine, Edinburgh Medical Journal, Archives of the Roentgen Ray, American Journal of Orthopedic Surgery, Dominion Medical Monthly, Critic and Guide, Practitioner.

Communications, Letters, &c., have been received from—

A.—Messrs. Allen and Hanburys, Lond.; Mr. W. H. Armistead, Edinburgh; Dr. R. W. Allen, Lond.; Mr. R. J. Albery, Lond.; *Ars Medici*, Vienna, Editor of; Dr. D. Irving Anderson, Teluk Anson; Aberdeen, Medical Officer of Health of.

B.—Mr. W. G. Burcombe, Lincoln; Birmingham and Midland Eye Hospital, Secretary of; Messrs. Burroughs Wellcome and Co., Lond.; Bruce Service, Lond.; Bristol University, Registrar of; Dr. R. H. Barker, Hungerford; Mr. F. Brachi, Lond.; Sir Lauder Brunton, Bart., Seaford; Mr. C. Boulangé, Paris; British Medical Benevolent Fund, Lond., Hon. Secretary of; Mr. J. Browne, Lond.; Mr. Ronald R. B. Bannerman, Croydon; Bombay, Executive Health Officer of; Dr. Clark Bell, New York; Mr. H. E. Belcher, West Bridgford; Bureau Municipal de Statistique, Amsterdam, Directeur du.

C.—Cheltenham General Hospital, Secretary of; Chesterfield Hospital, Secretary of; Messrs. J. and A. Churchill, Lond.; Messrs. T. Christy and Son, Lond.; Mr. A. Cariess, Lond.; Chesebrough Manufacturing Co., Lond.; Crittall Manufacturing Co., Braintree; Mr. G. H. Cheatle, Lond.; Canadian Medical Association, Edmonton; Dr. C. Chopard, La Ciotat, Bouches du Rhône; Sir Thomas Chavasse, Barnt Green.

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I.—Ipswich, Medical Officer of Health of; I. M. Y.

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